

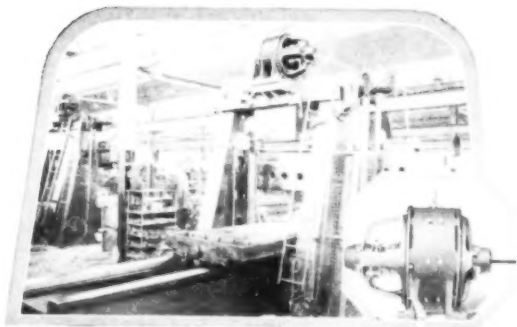
1921 No. 185
Monthly

A Reference for Buyers

**HITCHCOCK'S
MACHINE
TOOL LIST**

Distributed Free to Machine Tool
Users Everywhere in the United States and to
Dealers in American Machinery Abroad

Published by
A. H. HITCHCOCK
1220-1235 Caxton Building
Chicago



Protect your investment

Machines like these have the ability to produce at low cost. This ability, however, is dependent upon reliable driving power.

You can protect your investment and get the returns you want by specifying Type T Reliance Motors for such work. Because they are well built with more material in vital spots, these motors will make your big machines show more productive hours for the year.

Reliance Electric & Engineering Co.

1050 Ivanhoe Road, Cleveland, Ohio

Branches:

Boston New York Philadelphia Pittsburgh Cincinnati Detroit Chicago

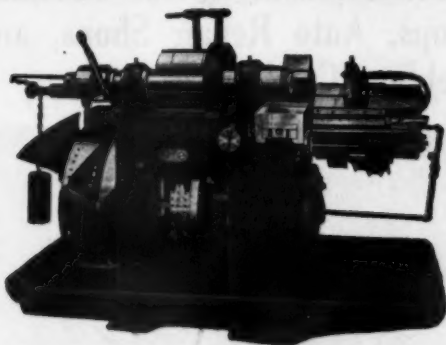
We specialize in motors, sizes 1/2 to 150 h. p., constant and adjustable speed D. C., squirrel cage and slip ring A. C.

Type

Heavy Duty
RELIANCE MOTORS
Direct Current







GRIDLEY SINGLES

Many jobs formerly considered "impossible" as automatic work are being made on Gridley Single Spindle Automatics. Not only the small jobs but the big fellows with husky turning and forming—and the deep heavy boring operations.

The Gridley Automatic is ready to handle your lathe work up to 5' in diameter, and handle it automatically. Its design and construction permit speedy turning and ease in setting up. This means low operating cost and we know that's what you're after. At least, it costs nothing to look over the Gridley Catalog. Send for one.

THE NATIONAL ACME COMPANY WINDSOR, VERMONT

General Offices, Cleveland, O.

Canadian Screw Plant, Montreal, P. Q.

Branch Offices:

New York

Boston

Chicago

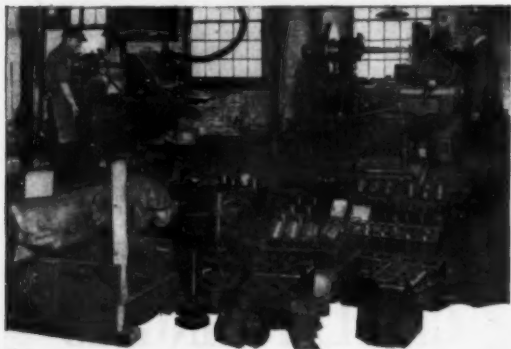
Detroit

Warehouses—New York, Chicago

With Foreign Representatives

Makers of Gridley Single and Multiple-Spindle Automatics at Windsor, Vt., and Acme Automatics, Threading Dies, Collapsing Taps and Screw Machine Products at Cleveland, Ohio

Cylinder Grinding for Machine Shops, Auto Repair Shops, and Welding Companies



Cylinder Grinding Corner at Ramdell & Van Dyke's, Worcester, Mass.

Possibilities

There were 8,000,000 registered cars last year and only approximately 500 concerns properly equipped to grind.

Profits

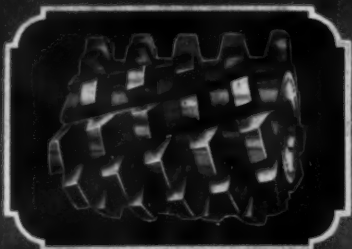
3 four-enbloc cylinders a day will give a two-man shop unusually attractive profits on capital invested.

Grinding Machine

The Heald Style No. 55 is self-contained, simple, has a large range and can be bought at a nominal price.

We would like to give you full details on the possibilities, profits and advantages of cylinder regrinding

The Heald Machine Co., 6 New Bond St., Worcester, Mass.



BROWN & SHARPE

FOR GEAR - WORM WHEEL - SPECIAL PURPOSE

HOBBS

"For Increased Production
and Lowered Operating Costs."

Due to careful selection and heat treatment of the steel used, coupled with the use of special machinery and skilled workmanship, B & S Hobbs assure extreme accuracy, durability and consistent uniform production.

Send for Catalog 28 - Giving
Hob Data and Listing
over 3000 Cuts

BROWN & SHARPE MFG. CO.
PROVIDENCE, R. I.

Monarch Lathes



give universal satisfaction to the user. They have been doing this for years, and this accounts for the ever increasing demand for **Monarch Lathes**. Built in all styles and with any attachments desired.

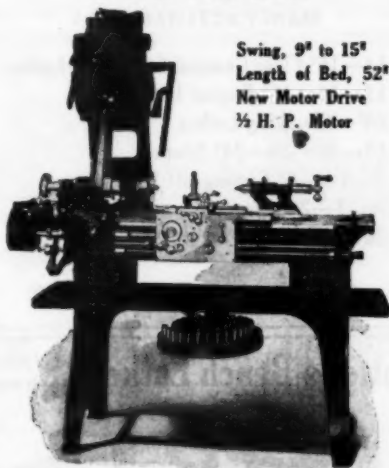
Sizes 10 to 30-inch Swing

*Sold by a leading Machinery Dealer
in every machinery center.*

THE MONARCH MACHINE TOOL CO., 106 Oak St., SIDNEY, OHIO

The Cataract Precision Lathe

Insures Quick Quality Output
In Your Tool Room



Swing, 9" to 15"
Length of Bed, 52"
New Motor Drive
½ H. P. Motor

"Cataract" Quick-Change-Swing Precision Lathe

The outstanding merits of the HARDINGE "CATARACT" are absolute accuracy, simplicity of operation and great range of manipulation. It represents the matured product of nearly 40 years of specialized machine tool manufacture.

The swing can be raised 3" or more by raising blocks, which greatly extend its range of production. A 60-hole index provides for cutting double, triple or quadruple screw threads. Lead screw, 6 pitch 1"x39" changed to 10 pitch by gears in reversing gear box.

All "CATARACT" Lathes are made with jigs and gauges, insuring interchangeability of all parts.

Send for Catalog, giving full specifications, gear tables, etc.

HARDINGE BROTHERS, Inc., Chicago, Ill.

DAVIS MACHINE TOOL CO.

ROCHESTER, - - - NEW YORK

MANUFACTURERS OF—

14—16" Close Coupled Tool Room Lathes.

12—14—16" Engine Lathes.

24"—Chucking Lathes.

14—16—20—24" Shapers.

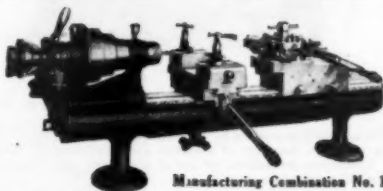
3—4½—6" Cutting-off Machines.

No. 1—2 Keyseaters.

20" Drill.

Complete information upon request

Potter's Bench Lathe And Valuable Attachments



Manufacturing Combination No. 1

Furnished with or without double cross slide and large turret fixture, as shown in illustration, also attachments for milling, internal or traverse grinding, universal grinding and screw cutting, as well as compound slide rest, lever tailstock, tailstock turret, etc. A strong, dependable and versatile precision lathe which quantity production enables us to sell at a close price.

May we send you the fully illustrated Catalog?

S. A. Potter Tool & Machine Works

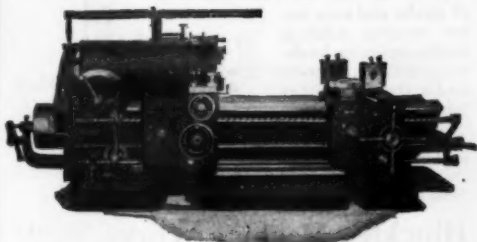
71 East 130th St.,

New York City, N. Y., U. S. A.

STEINLE TURRET MACHINE CO.

MADISON, WISCONSIN

Originators of the Heavy Duty Full Swing Side Carriage Turret Lathe



The Tool and Its Product

The tool invariably bears a direct relationship to its product. A good tool, well designed, and of proper construction means accurate work at very low production cost. There are many money-saving features about the STEINLE TURRET LATHE that instantly appeal to the careful buyer. The general massive construction, the ease of operation of all parts, the single pulley drive and 30 reversible spindle speeds, the power rapid traverse of both carriages, the power cross feed of side carriage and the general adaptability to special tooling, enabling rapid, accurate, and economical production—these are strong points well worth considering.

STEINLE LATHES are widely used by leading concerns. They can produce for you as they are now producing for others.

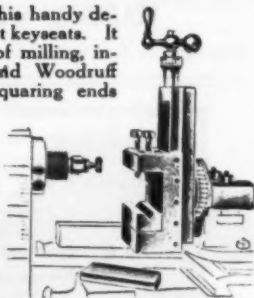
Why not send us your blue prints and let our Engineering Department determine what can be done on your own work?

A Miniature Machine Shop

With the Davis Lathe Milling Attachment

The picture shows this handy device set up ready to cut keyseats. It does a great variety of milling, including both plain and Woodruff keys. Also fine for squaring ends of shafts and auto axles; sawing; splining shafts; splitting bushings; drilling, boring and a thousand other jobs.

Fits Lathes of all makes, and every size from 12" to 24" swing. Send for folder and price.

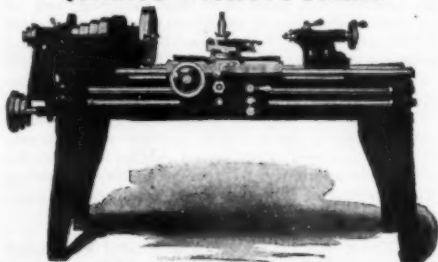


Hinckley Machine Works, HINCKLEY, ILL.

"STANDARD" ENGINE LATHES

14"-16"-18"-20" swing. Beds 6 to 16 ft.

"QUALITY WITHOUT FRILLS"



A moderate price lathe combining simplicity and accuracy with the highest grade of materials and workmanship. Suitable for repair shops, garages, manufacturing plants, etc. Send for descriptive circular and prices.

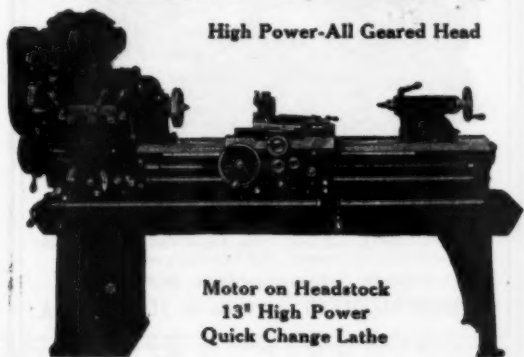
THE STANDARD LATHE WORKS

2951-61 Colerain Ave., CINCINNATI, OHIO, U. S. A.

You Can't Beat The New Willard

(Mattman-Bratten) Tool Room Lathe
For Maximum Economy and Efficiency

High Power-All Geared Head



Motor on Headstock
13" High Power
Quick Change Lathe

The NEW WILLARD is a high grade, up-to-the-minute tool Room Lathe, completely redesigned, and combining unrivalled economy of operation with maximum efficiency of production.

Here are a few of its features:—

The spindle is chrome nickel steel, forged and bored from the solid, ground to accurate size and guaranteed interchangeable.

All gears are chrome nickel steel, and all sliding gears are hardened.

Headstock is a full box section, internally ribbed and fully self-contained, with selective speeds inside the headstock.

Only one speed can be engaged at one time.

There are six speeds, and six others are available thru the back gears—TWELVE IN ALL.

Send for full description of this new, superior, cost-cutting lathe.

The Willard Machine Tool Co., Inc.

F Street, Box 784

CINCINNATI, O., U. S. A.

“LEHMANN LATHES”

Three Step Cone—Double Back Geared and Geared Head—Single Pulley Drive or Arranged for Motor Drive



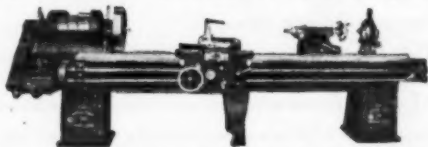
Five Sizes—14" to 24"

These are strictly high-grade engine lathes of superior design and thoroughly good workmanship and material. Built for accuracy and production.

Write for complete specifications and details. Do it today—NOW.

LEHMANN MACHINE CO., 3562 Chouteau Ave., ST. LOUIS, U.S.A.

Sidney Medium and Heavy Duty Lathes **For EVERY CLASS of Lathe Work**



MEDIUM DUTY LATHES in 14", 16", 18" and 20" swing.

HEAVY DUTY LATHES in 15", 17", 19", 25", 27", 30" and 36" swing. They give satisfaction everywhere.

Write for Bulletin No. 45

The Sidney Machine Tool Co.
Sidney, Ohio

Before buying a new centering machine, put a



McCROSKY STEADYREST

on one of your surplus lathes. The combination will give you an ideal centering machine, producing centers more rapidly and accurately than a regular centering machine, and at a greatly reduced cost. McCrosky Steadyrests, of course, can be used to equal advantage on practically all operations that could be done on the old style steadyrest.

*McCrosky Steadyrest Bulletin has full details.
Send for a copy today.*

McCrosky Tool Corporation
Meadville, Pa., U. S. A.

Branches and Agencies in all principal cities

Export Agents: Benjamin Whittaker Inc., 21 State St., New York



RED-E Lathe Centers, with High Speed Steel Points
Increase Lathe Output



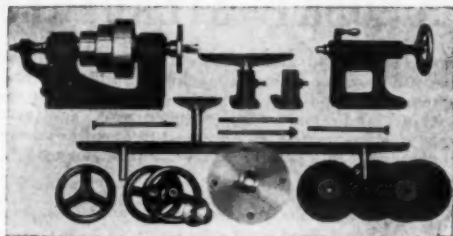
They last *10 to 20 times longer between grindings* than do the regular carbon centers.

They *increase output* by saving the workmen's time, by keeping the machines busy, and by enabling operators to run machines at the highest speeds.

Accurately made and points ground true. Positively will not burn or freeze to work. B. & S., Morse and Jarno tapers.

Catalog H-19 shows our full line. May we send it?

The Ready Tool Co.
 Bridgeport, Conn.



Wood Lathes of new design. The five sizes swing 6, 8, 11, 13 and 16 in. Also improved Emery Grinders, Countershafts, Bench Tapping Machines and Foot Presses. Write me for prices.



**Saw
 Mandrels.**

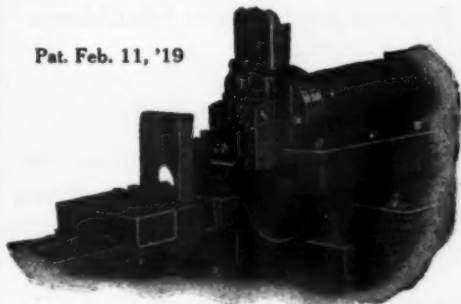
E. O. PARTRIDGE, 2041-2049 W. Lake St., **CHICAGO**

BRUNO

Slotting Attachment

for Shaper and Planer

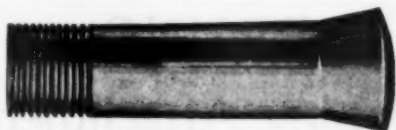
Pat. Feb. 11, '19



A cutting tool holder which converts your shaper into a Horizontal Slotter and makes possible the most intricate shaping such as is required for dies, jigs, gauges, keyways, slotting, etc.

Write for circular, Dept. H.

H. A. MOORE CO.
ROCHESTER, N. Y., U. S. A.



COLLETS

for

Lathes and Screw Machines

Any Size

Any Type

Any Quantity

Morrison Machine Products, Inc.
"Collet Specialists"
Rochester, New York

We are prepared to estimate on

Building Special Machines

from submitted plans and specifications—making special tools.
We have the experience, men
and "know how."

Let us have your inquiries

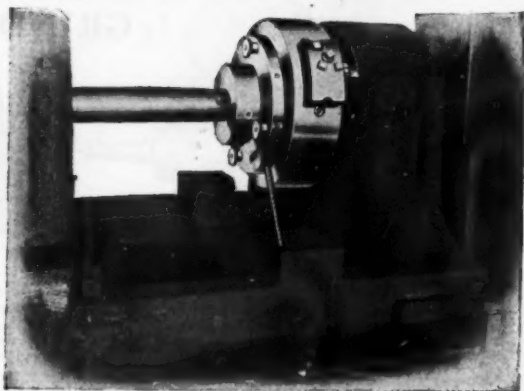
A. F. WAY CO., Inc.

P. O. Box 1088,

HARTFORD, CONN.

Facing End of a Large Bearing

With Mummert-Dixon Heads



This Shows How They Work

There is no other method by which this job could be done so easily, so quickly and so well. The lathe tool is fed across the face of the head automatically, working either from the center outward, or from the outer edge inward.

The variety of work that can be handled with these facing heads better than with any other method of holding the cutting tool is really surprising. They operate on lathes, milling machines, boring machines and drill presses—anything that carries a spindle or will drive through a bar. They are entirely self-contained, the feeding mechanism being entirely within the head, an arrangement which is simple, positive, effective and safe.

Let us show some of the applications made of this convenient trouble reducer. They will interest you

MUMMERT-DIXON CO., - Hanover, Pa.



DUMORE No. 1 GRINDER

THE Wood Turret Machine Company of Brazil, Indiana, uses the DUMORE High Speed Grinder in many ways which readily show its real merit—in grinding the head of the Wood Turret Lathes for example, and in finishing spindle ends, etc.—the high speed of the DUMORE giving a result much superior to that obtained from slow speed grinders.

Here is a tool in which perfect running balance is combined with correct cutting speed. With a DUMORE in the shop there is no costly tearing down of jobs—no wasteful delay. It is set up easily and quickly wherever it is needed. The DUMORE can solve your grinding problems. It is the only tool on which you may surely rely for speed and accuracy.

Your dealer sells DUMORE Grinders
Ask him for a demonstration

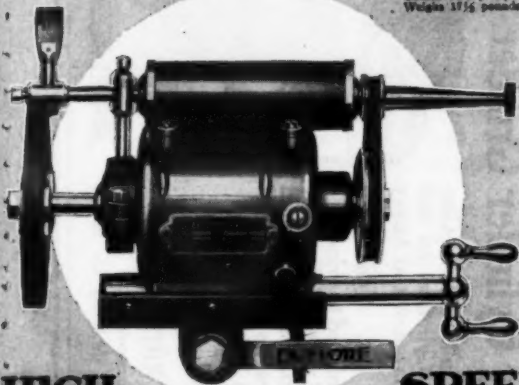
WISCONSIN ELECTRIC COMPANY
4329 Sixteenth Street, RACINE, WISCONSIN

DUMORE

Machine Tool Builders Use the **DUMORE**

EQUIPMENT A

For general tool room use.
Includes High Speed In-
ternal Spindle A with reach
of 3 inches. 30,000 R.P.M.
Comes fully equipped.
Weighs 17½ pounds.



HIGH SPEED GRINDERS

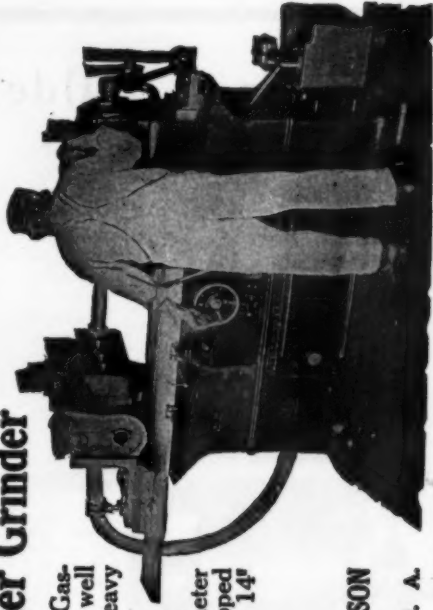
Whitney Cylinder Grinder

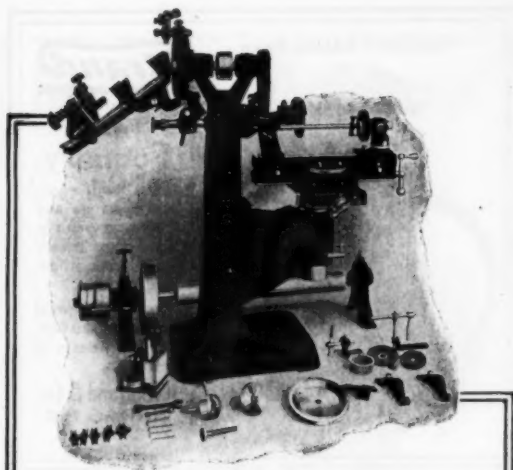
For grinding all kinds of Gasoline Engine Cylinders as well as work too large or too heavy to revolve.

Machines furnished to grind holes from 3" up to 7" diameter and 14" deep. Also equipped to grind holes as large as 14" diameter and 20" deep.

Write for new catalog

BAXTER D. WHITNEY & SON
Incorporated
WINCHENDON, MASS., U. S. A.





No. 0 Cutter, Reamer and Drill Grinder

This Precision Grinder is particularly designed for shops and tool rooms requiring a complete and accurate Universal Grinder of medium size. It also comprises the New Yankee Drill Grinder.

*If you haven't already
done so — investigate.*

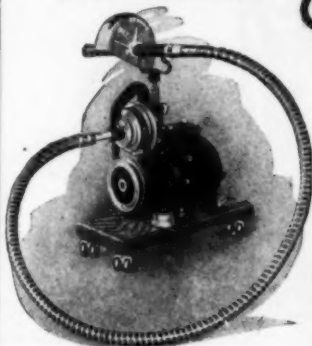
Wilmarth & Morman Co.

Master Grinder Makers

1185 Monroe Ave., N. W.,

Grand Rapids, Mich., U. S. A.

Type M 7 Caster Base



We build them

Strand

TRADE MARK

For the

Foundry

But it grinds down your costs on any job where grinding, polishing or scratch brush work is desired.

We build several sizes and make various attachments to fit the job.

N.A. Strand & Co.
Machinery Hall
Chicago

Ott Grinders

Combine the essentials of
ACCURACY and **RIGIDITY**
with **SIMPLICITY** of design

Simplicity accounts for their price, and for their popularity among good operators.

5"x18" Plain—10"x32" Universal—6"x6" Internal

Ott Grinder Company
200 West Tenth St., Indianapolis, Ind.

The "Miller" Wheel Dresser

An Invaluable Cost-Reducing
Grinding Wheel Accessory



Ordinarily much time, labor and power are wasted in the "truing up" of worn or warped grinding wheels. The Miller Radius and Angle Grinding Wheel Dresser cuts out all this expensive and needless loss.

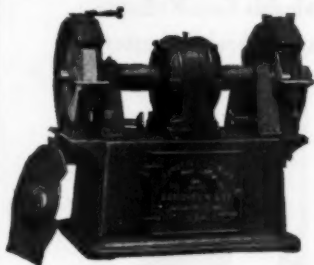
Forms radii from 0° to 1¼" concave or convex. Also dresses any angle or form required. "Trues up" wheels up to 12" in diameter. Diamond can be set at right angles through three splines in tool post. Center height adjustment 2". Distance of measuring post to pivot center is 3". By a simple calculation the desired concave or convex can be made quickly and correctly.

For enabling you to make a heavy cut in the high cost of grinding the "Miller" can't be beat. *Why not let it both earn you many good dollars and insure quality production?*

Otto A. Miller & Sons

408 Moffat Bldg., Detroit, Mich., U. S. A.

Marschke Motor - Driven 18" Heavy Duty Grinder



An efficient, self-contained Grinder, with the weight of metal to practically eliminate vibration.

Enclosed motor construction, a. c. or d. c.; SKF ball bearings thruout; patented hood for greater safety; complete exhaust system.

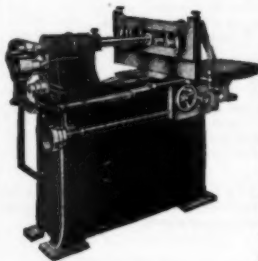
Emery wheel 18x3". Also made for 20x3" wheel.

The full description will interest you. Will you write for it?

Marschke Mfg. Co., Inc., Indianapolis, Indiana

"SCHMIDT" Internal Grinder

Slashes Auto Repair Costs



It is indispensable for the fully equipped automobile and tractor repair shop. Adapted for re-grinding ALL makes and sizes of cylinders and cylinder blocks.

With it any average mechanic can re-grind SIX FORD BLOCKS in a day—larger cylinders in proportion. Built for the toughest and heaviest wear and tear. Floor space, 3'x5'.

Why not let it earn you good dollars?

May we send you full details of this high grade economy tool?

B. L. Schmidt Co., Dept. A 8, Davenport, Ia.

**How Would You Like To
Get Away From
Diamond Expense?**

Then Ask Us About

The Precision Truing Machine

**A Device for Truing and
Dressing Grinding Wheels**



Can Be Applied To Any Cylindrical Grinder

Ask for Circular H-7

**The Precision Truing Machine & Tool Co.
Cincinnati, Ohio**

GRIND IT On a BLOUNT

20" Wet Tool Grinder



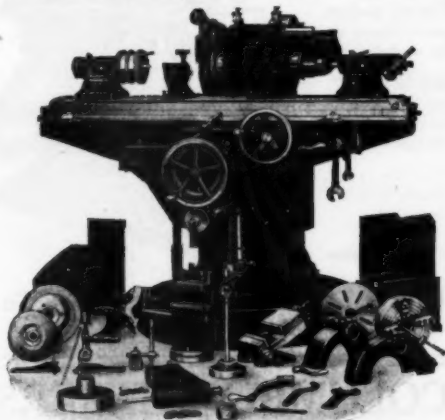
Catalog on request

Blount Wet Tool Grinders are built in three sizes for 14", 20" and 30" Grinding Wheels respectively.

J. G. BLOUNT CO., Everett 49, Mass.

Simplify Your Grinding—

With a Thompson 10x36 Universal



YOU MAY AS WELL save money on your grinding as on any other operation—the Thompson Universal makes it easy. It has no equal for plain grinding for straight or taper work between centers, nor for surface, edge, die, cutter and internal grinding. An exclusive feature is the fixed position of the grinding wheel, the work table being adjustable to any position relative to the wheel.

You will like it for its speed, wide range and dependable accuracy. Let us mail you the illustrated folder.

OUR SELLING REPRESENTATIVES:—

Notch & Merryweather Mch. Co.
Cleveland, Ohio
Manning, Maxwell & Moore, Inc.
New York, Philadelphia, Pittsburgh,
Buffalo, Cincinnati,
St. Louis, Seattle
Boston, Mass.
Kemp Machinery Co., Baltimore, Md.

Riverside Machinery Depot, Detroit, Mich.
Coughlin-Kirkby Mch. & Sup. Co., Toledo, O.
Wayne Mch. Co., Ft. Wayne, Ind.
Dayton, Ohio
Hill, Clarke & Co., Chicago, Ill.
F. E. Satterlee Co., Minneapolis, Minn.
F. O. Stallman Supply Co., San Francisco,
Los Angeles, Calif.

FOREIGN:

Bevan & Edwards Pty., Ltd.
Melbourne, Sydney

Selsam Engineering Co., London, Belgium,
France, Italy

THE THOMPSON GRINDER CO., Springfield, Ohio

Shapers

The best medium priced Shaper on the market.

Built in 16", 20", and 24" sizes, all back geared crank machines.

V-type ram. Double face bull gear.

Ask us about them



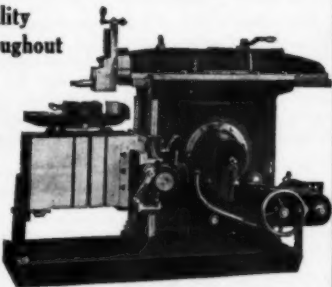
The Osborne & Sexton Mchy. Co.
Columbus, Ohio

COLUMBIA SHAPERS

Highest Quality
Modern Throughout

Merit,
not
price,
determines
their
selection.

Buy a MODERN
Shaper



16", 20", 24", 28", 32"

The Columbia Machine Tool Company
Hamilton, Ohio

Greenfield

Plain Grinder



A
Small
Grinder
for
Big
Results
on
Small
Work

It has the simplest, most durable and efficient mechanism ever devised for imparting the reciprocating motion to a grinding machine table, insuring *two to three times as rapid cuts* as you can get on large, expensive machines. And we have brought the price within the reach of every shop, by eliminating all unnecessary weight and making it extremely simple.

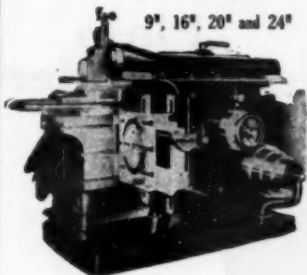
In a word, the "Greenfield" is a machine of both small initial cost and low operating costs, for the easy, quick and accurate grinding of cylindrical parts up to $2\frac{1}{2}$ " diameter.

A Grinder you should know about. Shall we tell you?

Greenfield Machine Company
Greenfield, Mass., U. S. A.

Also Manufacturers of the Greenfield Universal Grinder

The "MILWAUKEE" Offers 100% Shaper Service



9", 16", 20" and 24"

The positive stroke control is instantly adjustable. The Friction Locking Device, positive in action, stands up under the heaviest strains. Swivel tables can be swung to any angle. Rugged ram with "V" ribs operates without vibration. Powerful back gearing. Rigid column.

Want particulars?

MILWAUKEE SHAPER CO.,

Milwaukee, Wis.

SHAPERS

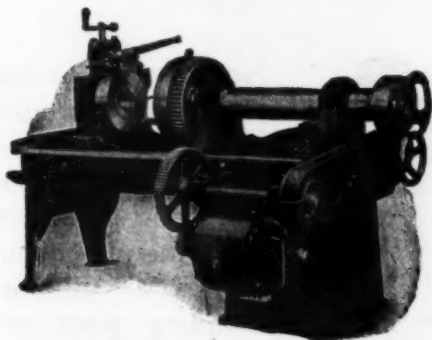
12", 14", 16"
Plain Crank,
16", 20", 25"
B. G. Crank,
either Cone
Driven or
through
Speed Box.

28" and 32"
Back Gear-
ed Crank,
Single Pul-
ley Drive.



The Smith & Mills Co. Station B,
Cincinnati, O., U.S.A.

**Speed and accuracy
guarantee a lower cost
on your pipe threading**



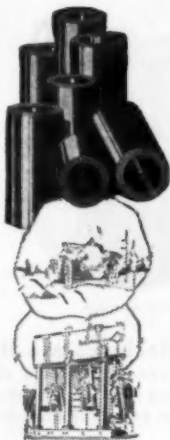
(No. 3 Peerless. All Gears are Covered)

Bignall & Keeler Pipe Machines are the ripe product of some 35 years' experience in building and perfecting this type of machine tool, and we know that every one of our 17 styles and sizes can keep your pipe threading and cutting costs down to bed-rock.

B. & Ks. are superior in conveniences, so that the operator has no trouble in getting out the maximum quantity of work. And besides having speed, they do accurate work day after day, year in and year out—they are built for the strenuous life and stand up to it.

*A full description is decidedly interesting
Let us have your name and address*

Bignall & Keeler Machine Works
Edwardsville, Illinois



Nowadays the man who wants Straight Bushings looks at Bunting's Stock Card and buys just what the job needs. Over a million awaiting your order. 143 sizes, completely finished. Low prices. Write for Card "W."

The Bunting Brass & Bronze Co.

Bronze Bushings and Bearings, Patented
755 Spencer St., Toledo, O.

NEW YORK CITY
Grand Central Palace
Vanderbilt 7300

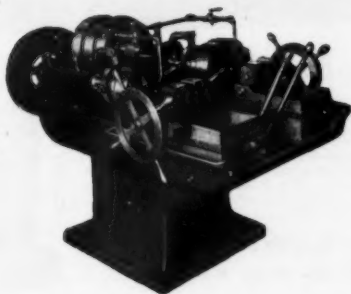
CLEVELAND
1362 East 6th Street
Bell-Main 5991

CHICAGO
722 S. Michigan Blvd.
Wabash 9153

SAN FRANCISCO
198 Second St., Cor. Howard
Douglas 6245

3500 1" Threads in 10 Hours!

A sample of profitable pipe threading



The Murchey Type 2 is a semi-automatic, double head nipple and pipe threading machine. It reams and threads in one operation, and cuts from a close nipple to full length of pipe. Requires no attention after pipe is started into die.

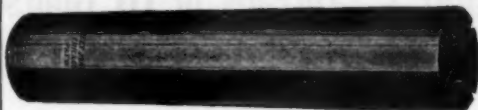
It cuts from 3000 to 3500 1-in. threads or 1750 high-grade nipples in ten hours. Murchey Self-Opening Die Heads insure quick, positive, universal adjustment. One man can run several machines at the same time. Built in sizes to cut $\frac{1}{8}$ " to 2" pipe.

Catalog and prices of these profit boosters on request

Murchey Machine & Tool Co.

850 Porter Street, Detroit, Mich.

NEW YORK OFFICE	-	-	-	-	99 Warren Street
CLEVELAND OFFICE	-	-	-	-	1625 Williamson Bldg.
PITTSBURGH Representatives,	-	-	-	-	Laughlin & Barney, 819 Wabash Bldg.
CHICAGO Representatives,	-	-	-	-	R. E. Ellis Engineering Co., 621 Washington Blvd.
LOS ANGELES Representatives,	-	-	-	-	Harron, Rickard & McCone, 225 So. San Pedro St.
Costa Machine Tool Company,	-	-	-	-	14 Palmer St., Westminster, London, S. W., England
Fenwick Freres & Company,	-	-	-	-	8 Rue de Rocroy, Paris

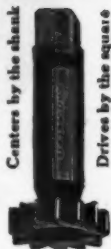


"Wear-Ever" Woodruff Chuck And Keyway Cutter

The "Wear-Ever" Woodruff Keyway Chuck insures a positive drive and true-running cutter. Eliminates making collet chucks. Fits all standard makes of milling machines, and is made in all tapers, such as Brown & Sharpe and Jarno tapers.

Let us supply you with cutters

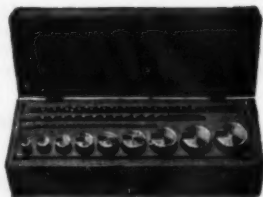
No extra charge for the square



SCULLY-JONES & COMPANY, 555 Railway Exchange Bldg.,
CHICAGO, ILL.

Your foreman and master mechanic will be interested in The Broach Well Keyway Set

Used under an arbor press, these tools will cut smooth, accurate keyways, cheaply and quickly.



Patent Pending

*An illustrated circular descriptive of the tool
and its uses mailed on request.*

Velco Manufacturing Company, Inc.
Greenfield, Mass.

Reduce Your Keyseating Costs

With the Rapid Catlin No. 8

**Simple
Efficient
Economical**

**Cutting Capacity
1-16" to 1½"**

**Adjustable Stroke
up to 13"**



HERE'S a machine that enjoys a world-wide popularity. It has made good in government shops, large automobile factories, navy yards and in all kinds of large and small plants the world over.

The crank motion enables the cutter to enter the cut at the slow part of the stroke. This is ever so much better than the ordinary rack and pinion way, where the rate of travel does not vary. It carries ½" to 1½" diameter cutter bars, which are self-contained and have the tool relieving and feeding mechanism. When belt driven, a three-step cone provides three speeds.

Let us send full details of this world leader

Chattanooga Machinery Company
Chattanooga, Tenn.

4" of Keyseat

Per Minute in Cast Iron Can
Be Milled With This Tool

Write for Catalog O

National Machine Tool Co.

2268 Spring Grove Ave., Cincinnati, O.



A Strong Portable Key-Way Cutter *Shipped On Free Trial*



New Style "B"

This handy little tool is easily taken right to the job where it cuts key-ways of just exactly the right dimensions. It does the work quickly, accurately and at minimum cost, saving labor and money. Just clamp the tool to the shaft and turn the crank.

Style "B" has six milling cutters and cuts keyways from $\frac{1}{4}$ " to 2" wide, in shafting 2 in. to 8 in. in diam. and 12 in. long without re-setting.

Send for our 30-day Free Trial offer

THE BUCHER-SMITH CO.
East Liverpool, Ohio

Bath Internal Micrometer

With Master Reference Ring



Patented
in United
States and
Europe

Few holes are found exact to size and round when measured with the Bath Internal Micrometer.

The Bath measures a hole, for size, roundness, taper and bell-mouth. The slightest variations from absolute standard are read direct in 0.0001".

It is a production gage. The operator may know the size of the hole at any time,—the amount of metal removed per cut,—and proceed knowingly until the hole is finished, without risk of spoiling the work.

It need never be thrown away because of wear. The gage may be instantly reset, as wear occurs on the measuring jaws, to correct size in the Master Reference Ring.

The Bath Master Reference Ring is an unchanging, absolutely reliable Master Reference Standard for the Bath Internal Micrometer. This Ring is not subject to wear.

Write for the complete illustrated Bulletin No. 10

JOHN BATH & CO., Inc.

Small Tool Department

WORCESTER, MASS.

Armstrong Drop Forged Wrenches

Superior Design and Quality



All
Kinds

All
Sizes

Catalog free

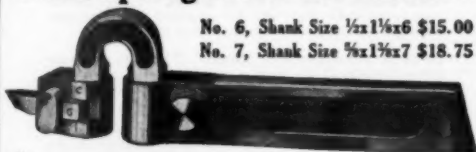


Armstrong Bros. Tool Co.

"The Tool Holder People"

308 N. Francisco Ave., Chicago, U. S. A.

Cleveland National Spring Head Tool Holder



No. 6, Shank Size $\frac{1}{2} \times 1\frac{1}{2} \times 6$ \$15.00

No. 7, Shank Size $\frac{3}{8} \times 1\frac{1}{2} \times 7$ \$18.75

For
Broaching,
Cut-off,
Forms,
Gauges,
Keyways,
Radius,
Taps,
Worm or
Square
Threading,
Etc.



Write for
30 days'
trial order

ALSO
Circulars
of other
Modern
Tool Room
Specialties

The Cleveland National Machine Co.

Dept. T. L.,

Cleveland, Ohio



Barnes Drills

8 to 50" Swing

State size you are interested in and we will gladly quote. This is our 20-inch Drill with wheel and lever feed. Can furnish self feed and back also.

We have made over 22,000 of this size drill—is very popular and there is a reason—it's the best 20-inch drill made for the money.

We make this
Adjustable Arbor Press
 In three sizes

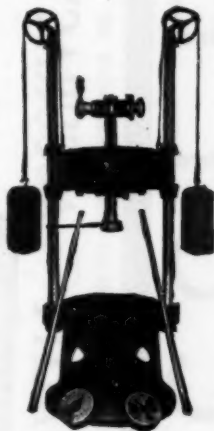
No. 1 size 12"x 24—\$100.00

No. 2 size 20 x 36— 175.00

No. 3 size 30 x 36— 200.00

* Means 12 inches between side screws.

Frankly, this is not a cheap Arbor Press, but is strongly made and most convenient to operate—just a lot better than others.



W. F. and John Barnes Co.
 123 Ruby St., Rockford, Ill.

COLLIS

JUST ANOTHER WAY OF SAYING

QUALITY—ACCURACY—SERVICE



No. 100-D Standard Type Sleeve



No. 100 Use-Em-Up Type Sleeve

STANDARD AND USE-EM-UP TYPES DRILL SLEEVES AND SOCKETS

CHUCK ARBORS
LATHE CENTERS
LATHE BUSHINGS

LATHE SOCKETS
HANDLED SOCKETS
DRILL DRIFTS

SQUARE TAPER SOCKETS
B & S TAPER SOCKETS
SPECIAL TOOLS

“WONDER” QUICK CHANGE DRILL CHUCK

Your Jobber Handles Collis Quality Tools

THE COLLIS COMPANY, MANUFACTURERS, CLINTON, IOWA

Why this all-purpose radial costs less



Our Radial Drill No. 50 is the same type as this No. 51 but has lever feed only.

C-O Self Feed Radial Drill No. 51

*Furnished with 2½
or 3½ foot arm*

This Model No. 51 has four instantaneous feed changes, self-oiling bearings, automatic cut-off and quick return lever on spindle—capacity for drilling up to 1½ inches and 2½ or 3½ foot arm.

HERE is a radial drill with an enormous range of drilling uses and with a great saving in parts, so that it affords you all that is desirable in a radial drill at a lower cost.

Notice that this No. 51 Canedy-Otto Radial attaches to shop wall or to post; that we have eliminated the cost of heavy shaft and base; that it puts your walls or posts to work for you and that it will do practically everything you need done in the way of drilling, from 1½ inches down.

Canedy-Otto POST RADIAL DRILLS

For Shops That NEED a Radial at a Lower Cost

THIS drill is the answer to the problem of shops which absolutely NEED a radial but have found it too heavy an expense. It is strong, simple, compact and made of best material by means of best workmanship. All bearings are hydraulically pressed graphite cones, increasing life of babbitted bearings 300% to 400%.

You cannot make a better investment than this

Canedy-Otto Manufacturing Company
General Offices and factory—Chicago Heights, Ill.
New York Office—Grand Central Palace

Surprising Cost Reductions

—in manufacturing costs, especially
in producing duplicate parts in quan-
tities, are being made daily on the—

Turner Turret

Made with 4 to 12 spindles, also to
order. The rotation is automatic, com-
pleting a series of operations at one
setting in the shortest possible time.
Send sketch of your work.

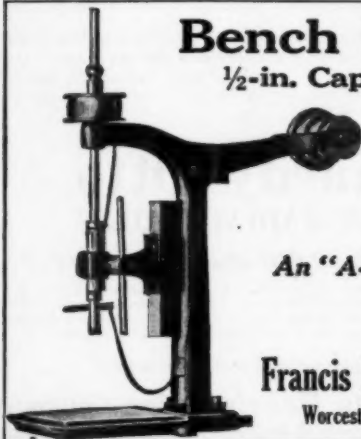
Full data in Bulletin FH
The "Quint" Turret in Bulletin QH



Turner Machine Company
DANBURY, CONN.

Bench Drill

1/2-in. Capacity



An "A-1" Tool

Francis Reed Co.
Worcester, Mass.

Model "E-50"

Sensitive Bench Drill Press

This 2-speed, direct motor drive, high-speed ball bearing drill is especially designed to care for all work, ranging from the smallest to a $\frac{1}{4}$ " hole.

Standard speeds 2,100 and 6,000 R. P. M.

Main spindle is heat treated and ground to size; it is guided through a quill with support at each end in an annular ball bearing.

End thrust is taken up by an end thrust ball bearing under feed arm.

A quick adjustable table has a working surface $5\frac{1}{2}$ " x 5", and will take work up to $4\frac{1}{8}$ " in height.

Surface of table is ground to insure accuracy.

Table has a self-cleaning taper, which keeps the precisely ground main column free from chips, and serves also as a guard to prevent injury to column.

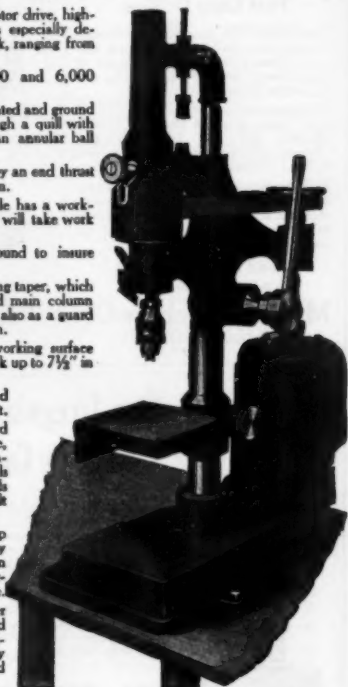
Base has a ground working surface 4" x 6", and will take work up to $7\frac{1}{2}$ " in height.

Base has oil groove and self-cleaning column support.

Your attention is called to another special feature, which is a spindle lock enabling quick changes of drills without the operator's hands coming in contact with belt or pulleys.

An idler pulley takes up any belt stretch which may occur in the endless woven canvas belt, without impairing sensitiveness of machine.

Front pulley and upper part of spindle are guarded by a semi-tubular guard insuring safety. Machine may be operated either by hand or foot control.



Height over all.....24"
Base..... $7\frac{1}{2}$ " x 18"
Diameter of spindle..... $\frac{7}{16}$ "

Spindle feed..... $2\frac{1}{8}$ "
Weight.....62 lbs.
Will drill to center of a 6" circle.

The High Speed Hammer Co., Inc.
Dept. 14
Rochester, N. Y.

Minster Jr. Drill

**For Heavy Boring or
Fast Light Drilling**

The MINSTER is a high grade single purpose drill press of such unusual design that it can take care of many heavy boring jobs usually put on larger drills.

At the same time its six speed and four feed changes make it highly efficient for fast light drilling. Changing gears affords any speed or feed desired.

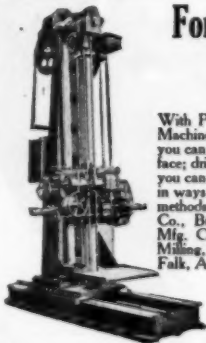
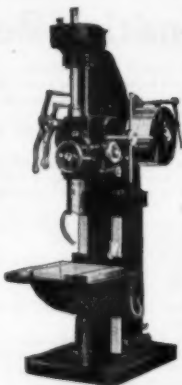
Ball bearings throughout, high carbon steel spindle and top quality wearing parts insure smooth, silent motion and capacity to stand up under long, hard usage.

Send for Bulletin 30

MACHINE TOOL DEPT.

Minster Machine Co.

Minster, Ohio



For Irregular Shaped Large Castings

With P & H Horizontal Drilling and Boring Machines you can drill 4, 6, 8 inches horizontally, you can drill and face; you can drill and back-face; drill and bore on long and bulky sections; you can save money and do some classes of work in ways you will find far in advance of average methods. Used all over the country—Crane Co., Bucyrus, Hanna Engineering, Goodman Mfg. Co., Worthington, Nordberg, Ingersoll Milling, Illinois Steel, Obenberger Forge, Elms, Falk, Allis-Chalmers, etc., etc.

Bulletin 214 on request.

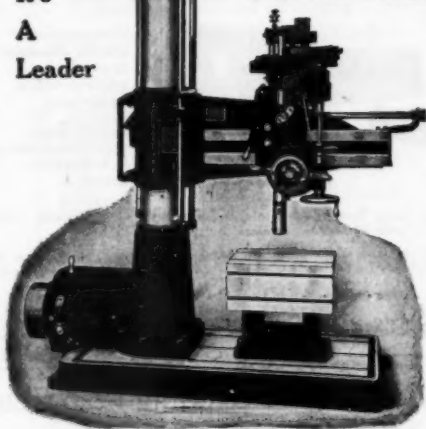
MACHINE TOOL DIVISION

Pawling & Harnischfeger Company

In Milwaukee Since 1884

**It's
A
Leader**

MUELLER RADIAL DRILL



"We Have Kept The Muellers,

as the foreman in charge insisted he got better and more work out of them than from some of the other makes we had in use."

The above is an unsolicited letter we had from a munition maker. When they reconstructed their plant for peace times they selected the MUELLER radial drills as some of the tools they wanted to keep because of the machines' EFFICIENT performance. There is a reason why everyone boosts the MUELLER radial. Ask us to tell you.

The Mueller Machine Tool Company

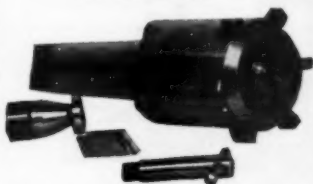
Radial Drill and Lathes

ESTABLISHED 1902

CINCINNATI, O.

Madison Adjustable Boring Tool

For Both Rough and Finished Boring



This new tool is quickly adjustable to size, and operates with a heavy feed.

Just the thing for cylinder boring in automobile shops.

This handy Boring Tool is ruggedly built, backed by solid metal. One turn of graduated screw increases cutter diameter .025".

It can be made with a piloted bar for work requiring it. The bar can be used in any kind of boring machine where cored holes are to be machined.

A new tool you should know. Shall we describe and quote?

MADISON MANUFACTURING CO., - Muskegon, Mich.

Champion Expanding Mandrels



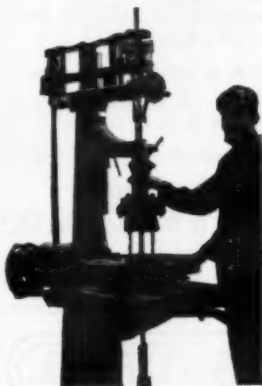
Made in only
2 parts

Positively the only mandrels which will completely and entirely fill the hole. Cost about *one-sixth* the price of solid arbors of equal range. Soon pay for themselves in saving the time lost in hunting for solid arbors to fit. As there are only two parts, a taper arbor and flexible round sleeve, there is nothing to get out of order. Having no jaws, they cannot injure or distort the work. For all classes of work, large or small, in all metals. Many other features shown in literature. Glad to send it upon request.

Western Tool & Mfg. Co., Springfield Ohio

"Buhr" Multiple Spindle Drill Heads

**Are Big Savers of Time
and Cost on Duplicate Work**



**We make
Fixed Center
Drill Heads
of all descrip-
tions in both
bronze and
ball bearing**

The above illustration shows a "Buhr" driving six 7/16" drills and drilling at high speed the bolt holes in wood wheels. This Drill Head has been running for five years with only one replacement of ball bearings.

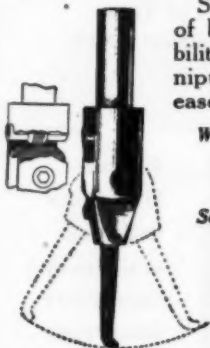
"Buhr" Multiple Spindle Drill Heads pay for themselves so quickly and effect such a saving that they are not an expense, but an economy. Besides, they insure absolute duplication or interchangeability of parts. Their use is so highly profitable that you should not do without them a day longer than is necessary if you have the work for them to do.

We shall be glad of the opportunity to post you fully

**Nelson-Blanck Mfg. Co.
Detroit, Mich.**

New York Office: Grand Central Palace

E-Z-SET Boring Tool



Superior to other types of boring tools in accessibility of parts, ease of manipulation, simplicity and ease of adjustment.

Write for circular and price list

4 SIZES

5/16, 3/8, 1/2, 5/8" Tool Bits

Sent on 10 days' approval

THE
B. & W. Tool & Die Co.
102 St. Clair Ave., N. W.
CLEVELAND, O.

The

COGS DRILL

Combination Centredrill and Reamer



PATENTED
Dec.-2-1919

Insures More Centre-Holes—Many More

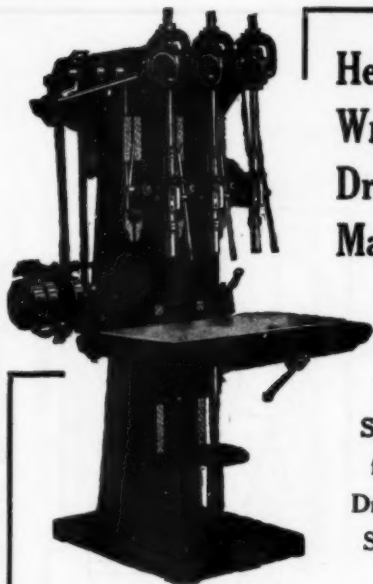
We recut our Centredrills after they are worn out for one-half the cost of new.

The deep-cut spiral fluted chip chutes do not clog.

Our methods of grinding and tempering reduce breakage to a minimum, which eliminates much stoppage of machines to change centredrills and saves a great deal of replacement cost.

Write for Catalog No. 2 and trial shipment

The Cogsdill Manufacturing Company
Detroit, Michigan



Henry & Wright Drilling Machines

with
1 to 8
Spindles
for $\frac{3}{4}$ "
Drills and
Smaller

Business conditions necessitate the closest economy in shop costs. Henry & Wright's, with their gearless power transmission and frictionless bearings, have reduced drilling costs far below the ordinary. There are 252 Varieties to choose from.

Write for Catalog, with scientific FEED and SPEED CHART

The Henry & Wright Mfg. Co.
760 Windsor St., Hartford, Conn.

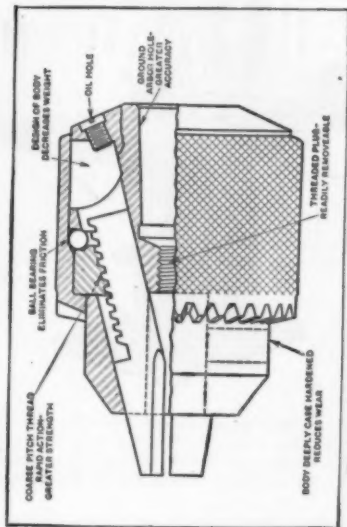
New York Office, 136 Cedar St.

OVER-SEAS REPRESENTATIVE

ALMACOA **ALLIED MACHINERY COMPANY OF AMERICA** **ALMACOA**
51 CHAMBERS ST. NEW YORK, U.S.A.

Principal Foreign Offices: Paris, Turin, Zurich, Barcelona

The New Jacobs Super Chuck



Patented 1909-1915—Other Patents Pending

ANNOUNCEMENT

We present The New Jacobs Super Drill Chuck—our contribution to greater drilling efficiency—a better chuck even than the Jacobs Drill Chuck you have known and used for the past eighteen years. The New Super Chuck is fitted with ball bearings, is better proportioned, quicker in action, more durable—from all standpoints the best chuck experience has been able to produce, that money can buy. We predict great things for this Super Chuck. You can expect great things from it.

The Jacobs Manufacturing Company

Hartford, Conn., U. S. A.



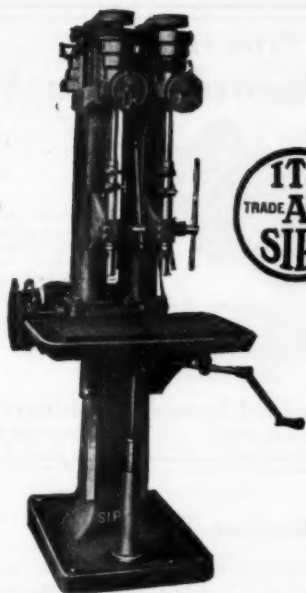
**Watch The Corners
Dollars Saved—Dollars Made**

Squeeze Your \$ Of Cost

Get An *Avey* Get all the Profit

**Drive To The Limit
Double Production—Half the Labor**

**The Avey Drilling Machine Co.
Cincinnati, Ohio**



Speed and Durability

Drilling speed is altogether a matter of operating convenience and simple mechanism

In Sipp Drill Presses the operator makes all changes from the natural working position; he changes speed instantly, and idler pulleys on slack side of belt insure full pull when needed. Accuracy is not sacrificed to speed—strong, rigid construction takes care of that. Sipp Machines are hard workers, durable, dependable. Four sizes, 1 to 8 spindles.

Send for circular.

The Sipp Machine Company
Keen Street, PATERSON, N. J.

"The Hartford" An Improved Modern Vise



Jaw width.....5 in.
Jaw depth.....1 1/4 in.
Weight.....40 lbs.
Maximum opening of
Jaw 3 1/8 in.

It went "over the top"
in handling huge rush fire
arms War Contracts in
New England, and of
course makes good now.

The "Hartford" stands up under the toughest, most exacting service. Made of the best materials. All parts interchangeable. It outwears more than four ordinary vises. It stands ready to help you establish new production records in your shop.

Send for full particulars

The Hartford Special Machinery Co.
285 Homestead Ave., Hartford, Conn.

Machine Tool Makers

should investigate carefully the facilities offered by **Hitchcock's Machine Tool List** for reaching this trade in all parts of the country. Its circulation is specialized to completely cover *every line of manufacture* in which machine tools are used—as well as all railroad and other tool-using shops—with a thoroughness and effectiveness not equalled by any other advertising medium.



20"



**Ten Good
Reasons Why
You Should
Specify It**

Reason No. 1
That Back Column

What you *can't* do because of it:

You can't "spring" the main column.

You can't produce a "bending stress" on the main column at all by heavy feed pressure. Consequently you can't impair spindle accuracy.

Result:—Absolute accuracy at the spindle which you can't vary in the slightest degree.

What you *can* do because of it:

You can have perfect accuracy for all time. You'll never have to wonder whether you'll have an accurate hole or not. You *know* you'll get it on a FRONTIER SUPER-DRILL.

You can replace worn parts time and again and you'll have a machine as good as the day it was bought.

That back column is only one of the reasons why the life of the Frontier Super-Drill is Double that of others.

There is a dealer in your town who has one in stock. Call and inspect it.

Catalog on request

Frontier Machine Tool Co., Inc.
130 Lakeview Ave., BUFFALO, N.Y., U.S.A.

G-S Combination Vise

For Drill Press, Milling
Machine, Shaper or
Planer.



*A
Great
Time
And
Labor
Saver*

**Vise
V-Blocks
& Angle
Plate**

Patented

	No. 1.....	Dimensions.....	No. 2
Increases	5"	Jaws Open.....	7"
& Improves	2 1/2"	Depth of Jaws.....	3"
	8"	Width of Jaws.....	9 1/2"
Output	1 1/2"	Jaws Overhang.....	2"
	65 lbs.	Weight.....	105 lbs.

**30 Days'
Free Trial**
Write for
Particulars

GERMANOW-SIMON MACHINE WORKS

55 MILL ST.
ROCHESTER, N. Y.

Hollands Machinists' and Woodworkers' Vises

Good for 33 years



And better now than ever

HOLLANDS VISES are made with solid or swivel jaw and stationary or swivel base, and each is a leader in its class. Machinists' Vises, Filers' Vises, Woodworkers' Vises—what do you need? Write for latest price list.

Hollands Tool Co.,

(Established
in 1887)

Erie, Pa.

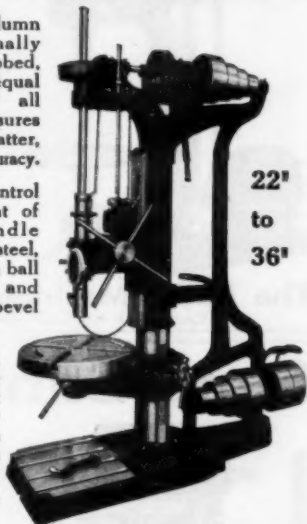
The AURORA Improved Drill

Offers High Grade Output At Rock-Bottom Costs

Its base and column are exceptionally heavy and well ribbed, provided for an equal distribution of all strains. This insures absolute non-chatter, durability and accuracy.

The feed box control is right in front of operator. Spindle made of the best steel, is furnished with ball thrust bearing and driven by 3-to-1 bevel gears.

The AURORA offers more power at the drill point than any other machine of its class. That means maximum speed and precision in hole-making.



22"
to
36"

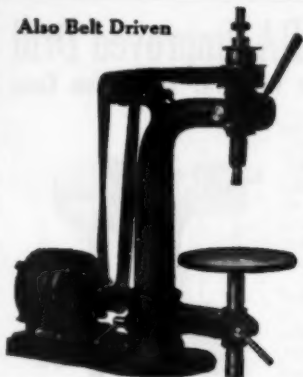
Other *exclusive* features: Patent Tapping Attachment; Fool-proof table; Automatic release worm wheel; Enclosed positive gears.

Our modern equipment and light overhead permit us to offer this superior drill press at an unusually moderate figure.

It will pay you to investigate. Write now

The Aurora Tool Works
Aurora, Indiana, U. S. A.

Also Belt Driven



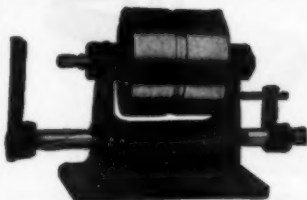
**Burke 10"
Bench Drill
Motor Driven**

Extremely accurate,
very sensitive and of
Burke Quality.
Has double flanged
top cone mounted
on large bearing
through which
spindle runs. Spin-
dle thrust taken on
a ball bearing.

*Worth more than
it costs. Write for
full information*

The Burke Machine Tool Co.
297 East 16th St., Conneaut, Ohio

Send Samples

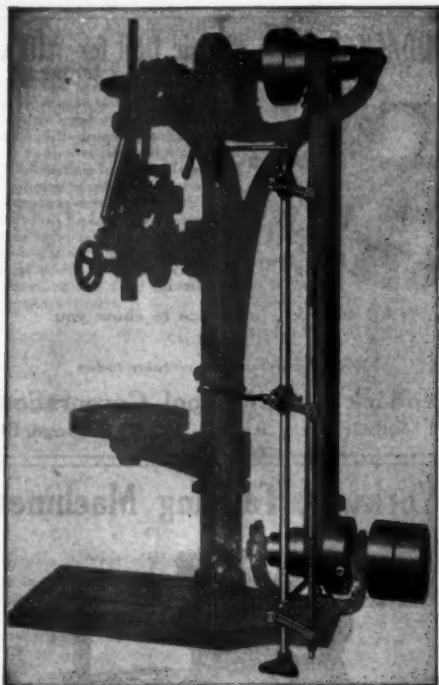


**or Drawings
of your Tapping
Jobs and let
us give you
Production
Estimate**

Burke Friction Driven Tapping Machines eliminate all shock to the tap, and for this reason stop 95% of your tap breakage.

Look into your scrap bin and figure up your losses in broken taps and imperfectly tapped work and see what you can save by installing Burke Equipment.

The Burke Machine Tool Co.
297 East 16th St., Conneaut, Ohio



Instant changes of speed for
drill presses increase production
and reduce compensation to injured
employees.

• *Details in Circular H-D*

The Kremer-Cummins Machine Company

1833-35 East 55th St., Cleveland, Ohio

WODACK Portable Electric Drill for WORK



It thrives on it—eats it 'up. Few parts, and as strong as metal can make them. Many years' experience designing electric drills for a large manufacturer, as well as repairing all makes of electric drills, enabled the designer to eliminate the faults and weaknesses of predecessors, and to make a drill that is fool-proof and wear-proof to a degree never before reached—a tool for honest-to-goodness hard work, steady work, effective work.

All we ask is a chance to show you

Do we get it?

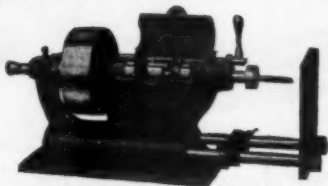
Write for descriptive circular today

Wodack Electric Tool Corporation

31 South Jefferson St.,

Chicago, Ill.

Workwell Tapping Machines



And *Workwell Countershafts* are well constructed machines. They cannot be classed with cheaper makes. If production and construction mean anything to you, send for our latest catalog. It will interest you.

Workwell Engineering & Mfg. Co.

Dept. 3. - - 4143-47 W. Kinzie St., Chicago, Ill.

DETROIT SEMI-AUTOMATIC DRILLING MACHINE

**Keeps the Operator Hustling
Drills Small Holes Quickly and Accurately**

A special
adaptation
of the
drill press
to meet
modern
production
requirements.

Capacities,
0 to $\frac{3}{8}$ "
drills.

Working
parts
enclosed.

Practically
fool-proof.



The specific purpose of the "Detroit" is the fast, easy and precise drilling of small holes in small work. When the drill feeds are given the desired adjustment they operate automatically and it's up to the operator to run the machine to capacity. The horizontal spindles insure maximum speed and simplicity of parts. It is the latest development of the modern drill press to meet the production needs of today and tomorrow.

Illustrated Folder and specifications on request.



6525-45 St. Antoine St.,

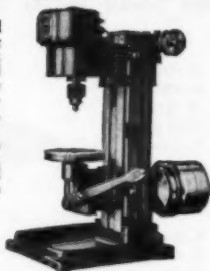
DETROIT, MICH.

Bicknell-Thomas Friction Driven Vertical Tapping Machine

It taps to the bottom of blind holes without danger of breaking tap. The elimination of all shock when reversing also saves taps and increases output. It is easy to operate, sensitive and highly productive. Capacity, 0 to 3/16" taps.

We also make Plain Horizontal Bench Tappers in two sizes, with capacities of 0 to 3/16" and 3/16" to 3/8". They are high-grade machines, sold at a low figure.

*Write for specifications
and the moderate price*

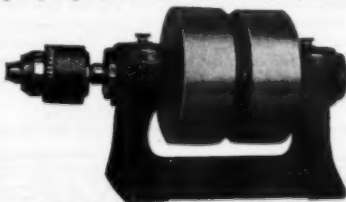


Bicknell-Thomas Company
90 Wells Street, Greenfield, Mass.

T-S Bench Tapping Machine 0" to 5-16" Capacity

Rapidly taps all metals of medium thickness

**A
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**R
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Price \$25.00 F. O. B. Rochester, N. Y.
Complete. Jacobs Chuck. Friction Drive

TAYLOR-SHANTZ CO.

480 St. Paul St.,

ROCHESTER, N. Y.

"R-S" Friction Driven Tapping Machines



Vertical Tappers

Equipped throughout with SKF thrust bearings. All annular bearings of phosphor bronze. Spindle travels to and from the work. Floor type only. Sizes, $\frac{1}{4}$ " and $\frac{1}{2}$ ".

Horizontal Tappers

Efficient and time saving. Can be direct connected to motor. Sizes, $\frac{3}{16}$ ", $\frac{5}{16}$ " and $\frac{5}{8}$ ". Bench or floor type.

Radial Tappers

Reduce handling of heavy auto and machine tool parts. Top-notch manufacturing machines that increase output and profits. Capacity of $\frac{1}{2}$ " in steel.

The Friction Drive

is under perfect control and highly efficient. The instantaneous reversing mechanism prevents breakage of tools.

Our Tapping Machine Bulletin gives full information. Send for it today—it's interesting

Rickert-Shafer Company

1110 Cherry Street,

ERIE, PA.



Woodstock Improved No-Tap-Breakage Chuck Is Safe—Every Time

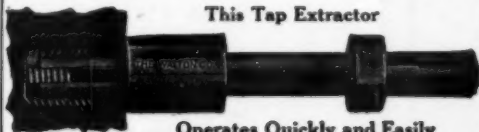
Here is a chuck which positively eliminates tap breakage. It has a friction drive, which is automatically released the instant tap binds or reaches bottom of hole.

Sometimes in difficult jobs a tap breaks before you can work the stop on the machine. With this Safety Tapping Chuck, however, all such danger is negligible. It saves time and money in any shop.

Ask us to send one on trial

Peter Bros. Manufacturing Co.
115 Railroad St., Algonquin, Ill.

Why Waste Time Over Broken Taps?



This Tap Extractor

Operates Quickly and Easily

The Walton Tap Extractor prevents the waste of valuable and costly time usually involved in taking out the ends of broken taps by the old destructive methods. The fingers of the tool are easily inserted within the flutes of the broken tap and with one or two simple twists the trouble is over.

Folder, or try-out, on request

THE WALTON CO., Hartford, Conn.



**Speaking
of dirt—
and dust—
Knickerbocker
says:**

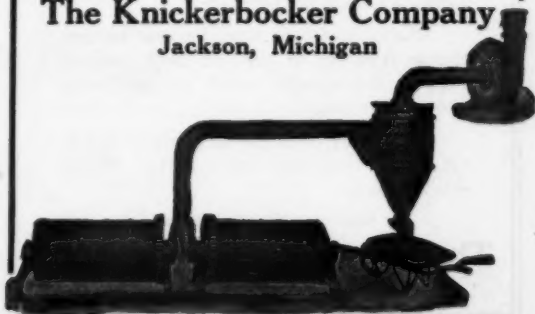
"If you take in your hands some of the black burnt dirt in a tumbling barrel, the hands will be soiled by the contact. You drop the dirt but a dark stain remains on the hands. Take up emery dust from grinders and the hands will be but slightly soiled.

"It is just the same with the air used to take up the dust. The air will drop the dirt in the Collector but will be soiled by coming in contact with the dust, and the 'stain' will show when the air passes from fan outlet into the atmosphere."

The "Rarefied" Dust Collectors collect all dust possessing any gravity. And they excel in economy of operation and upkeep.

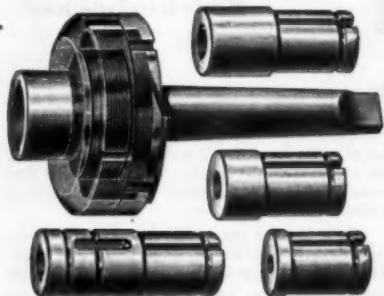
Booklet, and list of prominent users in all sections of the country, gladly sent on request

The Knickerbocker Company
Jackson, Michigan



Solves Your Tapping Problem

No Lost Time, No Broken Taps
No Waste, Anywhere



The Safety Friction Drive Drill and Tap Holder
Made in Four sizes, 0 to 2½"

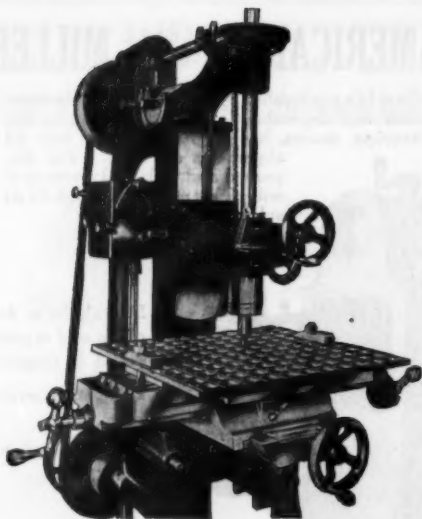
Drives a tap at full speed to the bottom of a hole—and stops it there, or anywhere it runs against anything to break it; insures you against loss from tap breakage.

Saves operator's time, because he can change from tap to drill, or back, without stopping the spindle; speeds up production and reduces cost.

If you are trying to tap without it, you are simply throwing money away. Please don't do that.

Give it a tryout instead

The Beaman & Smith Co.
Providence, Rhode Island



Let a Knight Save YOUR Time

"A Master Machine for Difficult Machining"

Their superior convenience and adaptability put Knight Milling and Drilling Machines in the front rank of time and labor savers. Jobs are completed with only one setting of the work. They are sure cost reducers wherever used—whether in tool room or shop.

The machining of the intricate mould shown in cut had them all guessing until it was put on a Knight—and then the difficulty faded away. Knights are built in four sizes.

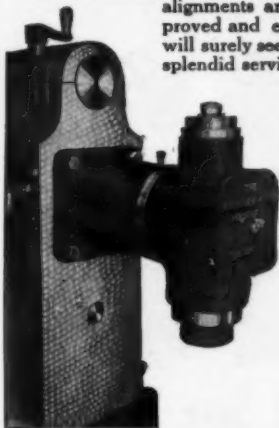
Our Circular tells more—but a try-out tells most

W. B. Knight Machinery Co.

3920 W. Pine St., St. Louis, Mo.

AMERICAN UNIVERSAL BACK GEARED MILLER

Ours is a top-quality, massive Miller, easily operated and dependable. It stands up under the heaviest strains, has ample bearings, and all alignments are true. For improved and enlarged output it will surely see you through by its splendid service.



Swivels in a full circle and is graduated in degrees.

Distance from column, 10½".

Height from Table 11½".

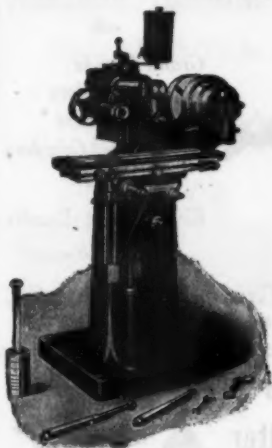
Swiveling Vertical Milling Attachment

This Milling Attachment swivels in a complete circle, is graduated in degrees, and is easily applied to column for all kinds of vertical milling. The face of all columns is drilled and tapped to receive attachment at any time. Greatly extends the range of the Miller's capacity.

Get our Illustrated Folder for the complete description

The American Milling Machine Co.
Cincinnati, Ohio, U. S. A.

No. 1 U. S. Improved
Hand and Weight Feed Milling Machine



There are many milling operations which our Hand Miller will do in much less time and at far less cost than can be done on large, costly milling machines.

This applies particularly to the milling of small parts.

The U. S. No. 1 is a hand miller of quick adaptability and wide range, with more power than any similar machine of equal size anywhere, making it an exceptionally useful tool in any shop.

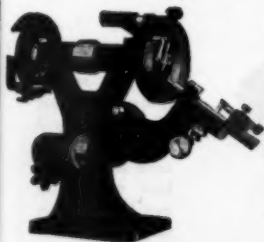
The vertical and horizontal feeds are independent and permit the work being held close to table, so that it may be used as a profiler. The vertical lever feed being independent from the table and the head accurately counterbalanced, light milling work can be done on long or heavy pieces without danger of breaking cutters. The table is operated by hand lever, also crank feed with rack and pinion. A weight attachment permits head and table to be fed automatically. There are adjustable stops for both table and head. All in all, the U. S. Hand Miller is a machine which you may find it quite profitable to thoroughly investigate.

May we mail you the full particulars?

The United States Machine Tool Co.

Cincinnati, Ohio, U. S. A.

Keep Up Your Tools Keep Down Your Costs



with
**Grand Rapids
Drill Grinders
Tap Grinders
Universal Grinders**

which
Give Perfect Results
Catalog on Request

Grand Rapids Grinding Machine Co.

17 Ottawa Ave., N. W., Grand Rapids, Mich.

No. 190 "WELLS" Universal Cutter *and* Reamer Grinder

Will handle practically
all grinding require-
ments of the small shop
at a moderate cost.

*Write for descriptive
data sheet*

MACHINE TOOL DIVISION

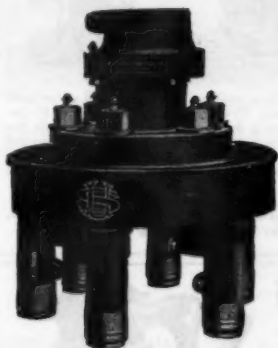


GREENFIELD, MASS.



HMT 498

**U. S. Patented Adjustable
Multiple Spindle Drill Heads
Save Much Time and Money**



**Send us
a lay-out
of your
drilling
operations
and let
us show
you how
much we
can save
you**

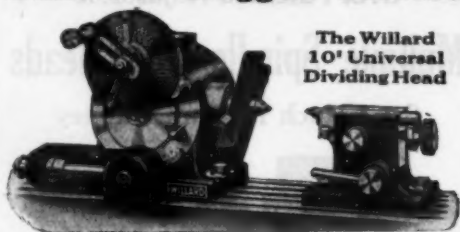
Our Nos. 1, 2, 3 and 3-A Standard Adjustable Drill Heads are furnished with two to six spindles—special Adjustable Heads to order. They have a double adjustment of spindles, a patented feature which permits drilling in squares, triangles, rectangles, ovals, straight line work and odd or staggered. The No. 4 has four spindles, with single adjustment for drilling holes equally spaced in multiples of four in pipe, fittings, flanges, etc.

**Also Fixed Spindle Heads of any Practical
Type Made to Order**

*Send us sketches or blue prints of your work and let us
quote on your requirements. The obligation is all ours.*

The United States Drill Head Co.
Cincinnati, Ohio, U. S. A.

Built For Rugged Service



**The Willard
10' Universal
Dividing Head**

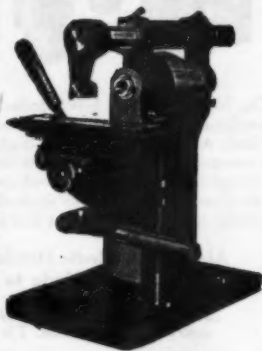
Divides any job on a plain milling machine. The graduated swivel head adjustable at any angle between 10 degrees below horizontal to 10 degrees beyond vertical. Clamping device is specially rigid. Spindle has No. 10 B. & S. taper and is made of the highest grade steel, hardened and ground. Head and tailstock centers made of best tool steel. Complete index plates. All parts interchangeable. Made right or left hand. *Full details on request.*

THE WILLARD-MIDDLETOWN MACHINE CO., Cincinnati, O.
Successors to The Willard Press & Tool Co.

This Hand Feed Miller \$155.

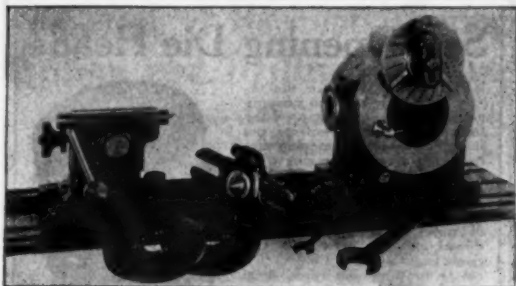
**Save Power—Save Room
Save Money**

That is what you do when you install Burke Milling Machines, as they take less power, need less factory space, and on account of the convenience in operation your small milling operations can be done much more rapidly than on a larger, heavier type machine.



Write for Catalog, which also shows larger and smaller sizes.

The Burke Machine Tool Co.
297 East 16th St., Conneaut, Ohio



Plain Index Centers Swing 10" Diam.

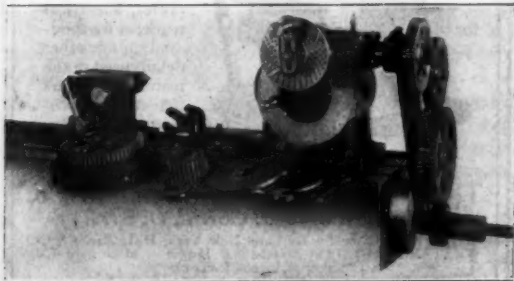
SIMMONS OF ALBANY

These Dividing Heads or Index Centers may be used on any milling machine; are well designed; materials are the finest obtainable.

The Universal Index with Spiral Cutting Attachment is a quite recent development and will be found remarkably useful in any tool-room. Let us tell you more about these accessories.

SIMMONS MACHINE CO., Inc., ALBANY, N. Y.

BRANCHES: 801 Singer Bldg., New York, 86-88 Exchange St., Buffalo, N. Y.
Albany and Buffalo Warehouses



Universal Index Centers with Spiral Cutting Attachments

Self-Opening Die Heads

"VICTORS" produce the utmost in quantity and quality thread-cutting. They feature new improvements not found in other self-opening die-heads. They afford bearing to the complete length of back of chasers, preventing the tilting and cutting of tapered threads. By regulating travel of turret, length of thread can be precisely fixed and when cut is finished die-heads open automatically. Have Roughing and Finishing Attachment.

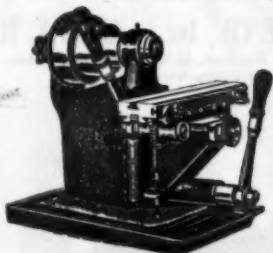


Get our price list and folder

Victor Tool Company
Waynesboro, Pa.

Sizes
 $\frac{3}{4}$ " to 6"

Just The Machine



for those light cuts on details for Fire-arms, Sewing Machines, Typewriters, Bicycles, Electrical work, and a thousand and one other details used in the manufacture of the various products of the manufacturing world.

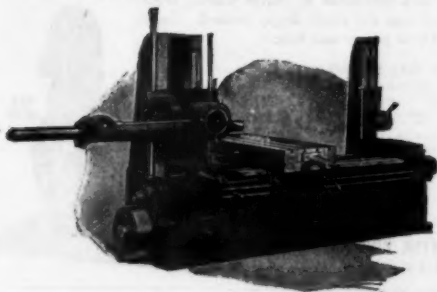
Send for descriptive circular

The Carter & Hakes Machine Co.
West Winsted, Conn., U. S. A.

AGENTS—for New England and New York, Hill, Clarke & Co.
WESTERN AGENTS—Marshall & Huschart Machinery Co.,
Chicago, St. Louis, Indianapolis.

The Lambert Horizontal Boring, Milling and Drilling Machine

**Extremely Simple—Wonderfully Accurate
Under Quick and Easy Control of Operator**



Extreme simplicity and precision are the salient features of this modern machine, combined with unusual convenience and productiveness. Quickly controlled by two levers which slide along the horizontal bars—one starts, stops or reverses any feed, and the other starts or stops the bar.

Bronze bushings and steel gearing used thruout the machine. It is arranged so left hand millers and cutters may be used when required. Bed permits operator to get close to his work. Construction of head affords greater range for boring or milling from table to center of bar. Spindle head enables both facing and boring to be done at the same time. Verniers furnished for table cross feed on request.

Make its better acquaintance. May we send Folder?

Carroll Foundry & Machine Tool Co.

Bucyrus, Ohio, U. S. A.

Quick, Economical, Productive Peter's Abrasive Metal Cutter

This handy abrasive cutter cuts high speed or any kind of hardened tool steel in less than one-fourth the time required to nick and break it. Saves wasting stock, and cuts the exact shape desired. Saves 75% in power and time.

8" Size \$22.50, with C. S.

Splendid for tool room. Cuts high-speed steel up to 1" square.

12" Size \$60, with C. S.

Cuts up to 2 1/2" diameter, round or square, at any angle up to 45 degrees. Ball bearing.

15 Days' Free Trial

Write us or ask your dealer

PETER BROTHERS MFG. CO.

115 Railroad St., Algonquin, Ill.



KNOWLTON Cold Saw

Belt or Motor Drive.

Large Capacity.

Fast Cutting.

Easy to operate.

Handles all shapes.

Unexcelled for sawing
metal bars, Structural
Steel and Large Pipe.

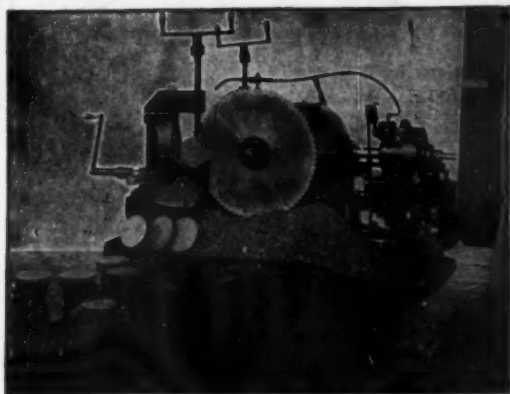
Circular on request

Knowlton Machine Co., Westbrook, Maine

Domestic Dealers

Hill, Clarke & Co., Boston; Barbour, Love & Woodward, New York City; Banks Supply Co., Huntington, W. Va.; Herberts Machinery & Supply Co., San Francisco and Los Angeles; Wolverine Machinery & Supply Co., Detroit; Frank Toomey, Inc., Philadelphia; Brown, McDonald, Michy, Co., St. Louis; General Machinery Co., Spokane; Sunderland Mach. & Supply Co., Omaha; Northern Machinery Co., Minneapolis; Federal Machinery Sales Co., Milwaukee and Chicago; The National Supply Co., Toledo; McMullen Machinery Co., Grand Rapids; Kemp Machinery Co., Baltimore; Neill-LaVielle Supply Co., Louisville; Day Machinery Co., Buffalo; Young & Vann Supply Co., Birmingham, Ala.; The Patterson Tool & Supply Co., Dayton

Cochrane-Bly No. 5 Cold Saw



144 Blanks 5 $\frac{1}{4}$ " Diameter Cut on This Machine in 8 Hours.

Actual Cutting Time Was 3 Minutes and 10 Seconds Per Cut.

Will Also Cut in Multiple at one Time

76 Bars $\frac{1}{2}$ " Diameter			
26	"	1 "	"
13	"	1 $\frac{1}{2}$ "	"
8	"	2 "	"
4	"	2 $\frac{1}{2}$ "	"

Five Sizes to Suit All Requirements up to 8 $\frac{1}{2}$ " Round Bar.

Write for Catalog

Cochrane-Bly Company
Rochester, N. Y.

"QUICKWORK"

Registered in U.S.A. and Foreign Countries

Rotary Shears

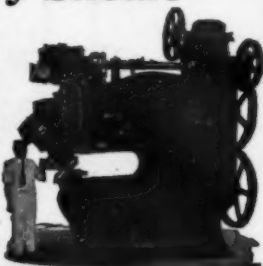
Made in 7 Sizes

Cut all gauges of sheet and plate metal up to 1 inch thick in straight or irregular shapes and openings without cutting in from side of sheet. Leaves square, true edge that requires no finishing. Used in building ships, boilers, tanks, cans & general plate and sheet metal work.

Save 50 to 90%

Eliminates Oxyacetylene cutting and plate planing

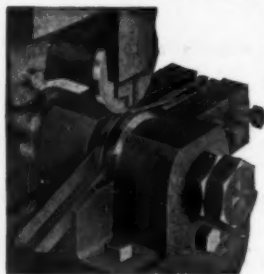
Write for catalogue No. 60



Patented June 3, 1913; Aug. 26, 1919.

THE QUICKWORK COMPANY, St. Marys, Ohio, U. S. A.
Cable Address "Quickwork," "W. U." and "General" Codes

Gray Sheet Metal Cutter **Not a Rotary Cutter**



Cutter and Feed Rolls

Made to cut sheet metal up to $\frac{1}{8}$ " thickness any shape you wish. No bucking, jamming, or nicked, ragged edges.

The ample throat gap allows a straight precise cut—not shear—making, if desired, the most complex and tortuous patterns—easily and perfectly.

Automatic feed like a sewing machine.

Respective capacities of Nos. 0, 1, 2 and 3:—

18"	throat,	1/8"	plate
34"	"	3/16"	"
36"	"	3/8"	"
36"	"	5/8"	"

Why not get acquainted with it?

W. J. SAVAGE CO., Knoxville, Tenn.

G. A. Lewthwaite High Grade Tools

Shear and Rod Cutter

An invaluable tool for speeding up and improving output in blacksmith and boiler shops and ship-building plants. Its quality mechanism, superior material and exceptional reliability account for its fine productive qualities. Has power to shear beyond its rated capacity. Will surely help your output to hit the high spots in a very short time.

Will the

Also

Pipe Benders
Bar Benders
Power Presses
Foot Presses
Etc., Etc.



BAR SHEARS, $1\frac{1}{4}$ " capacity and smaller.

PLATE SHEARS, $\frac{3}{8}$ " capacity and smaller.



G. A. Lewthwaite Punches and Dies

They do a maximum amount of work and make straight, clean, perfect holes. Test them out on your toughest work and they'll stand up every time. The secret lies in the special quality of steel used and in the highly efficient workmanship wrought into them.

Glad to mail you our Catalog
of Iron-Workers' Tools

George A. Lewthwaite Co.
116 Walker St., - - New York

Rollway Positive and Semi-Positive Pumps

Offer Better and Longer Service at Lower Costs



It is valveless, self-priming, there is no loss of prime, it doesn't clog, and runs at low speed. While specially adapted for tool and bearing lubrication it is equally good for all liquids.

It shows 30% increase over all other pumps of same intake and outlet. Various sizes, $\frac{1}{8}$ " to 2". Pumping capacity of all sizes from 2 quarts to 150 gallons per minute.

Let us solve your lubrication problems. Write for literature

Michigan Machine Co., Detroit, Michigan

DO You Use AIR?

**THE POWELL
AIR GUN VALVE**

JUST PRESS
THE BUTTON



ORDER A SAMPLE
THE W. M. POWELL CO.
1200 DRAPER ST.
CINCINNATI, O.

A Marvel of Speed and Economy

**Cuts 6" Cold Rolled
Steel in 10 Minutes**



**The Marvel No. 4
High Speed Saw**

Consider the speed and other improved features of this machine. The blade is always horizontal. Cuts on the draw stroke, with quick return. Adjustable stroke 4" to 6½". Automatic stop at any desired depth of cut. Takes 3" belt. Also furnished motor driven.

*Marvel Hack Saws and Metal Band Saws for every need,
and each the leader in its class. Write for Catalog.*

Armstrong-Blum Mfg. Co.
341 N. Francisco Ave., Chicago, Ill.



Whitney Bench Shear No. 3

Cuts sheet metal up to..... $\frac{1}{8}$ "
 Cuts rounds up to..... $\frac{5}{16}$ "
 Length of cutting blades.....7"
 Weight25 lbs.

Especially adapted to cutting sheet iron of any length or width, and rounds up to $\frac{5}{16}$ ". Blades made of best material, ground to perfect true cutting edge. Other parts made of steel castings, insuring strength and durability.

Also *Whitney Ball Bearing Punches*, in many styles and sizes—the easiest working punches made.

Write for Catalog and Price List

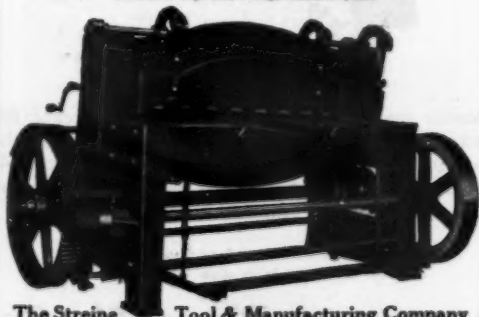
Whitney Metal Tool Co.

109-111 Forbes Street,

Rockford, Ill.

"Poorman" Sheet Metal Working Machinery

Squaring Shears—84 Sizes Gap Shears—21 Sizes Corrugating Rolls
 Crimping Rolls Forming and Roofing Presses
 Conductor Pipe and Trough Machines, etc.



The Streine **Tool & Manufacturing Company**
 New Bremen, Ohio, U. S. A.



Style "C"



The Hinge



Style "Y"



Style "B"



Style "G"



Style "O"



Style "L"



Style "T"

GITS OIL CUPS

Give perfect satisfaction where others fail. State style and size in which you are interested, and we will send free samples and catalog.

GITS BROS. MFG. CO

1940 SO. KILBOURN AVE., CHICAGO



Style "H"

Don't Lose That Oil!

Save it with a Curtis Extractor



No. 400—Capacity: 2 Bushels

Put your oily chips, shavings or waste into one of our oil extractors, and you'll be agreeably surprised at the amount of oil it will save. In a few months the cost will be returned, and after that it puts dimes and dollars into your pocket as long as you use it. Ball bearing, and built to last a lifetime.

Let us send you circulars describing the three sizes. Write us now.

Albert B. Curtis Estate

Box 44

-:-

-:-

Worcester, Mass.

Punches—Shears—Bending Rolls
The Beloit
Combined Power Punch And Shear



Built in six sizes. Nos. 51, 52, 53, 54, 55 and 56

Direct connected motor or belt drive

This is the best all around punch and shear in a combined machine of moderate cost. It is heavy and substantial, and amply back geared to require the minimum amount of power; is strong, compact, and easy to operate. Can be equipped with angle shearing attachment, architectural jaw, or for special work.

We are putting out a complete line of punching and shearing machinery in both power and hand tools, also light and heavy duty bending rolls.

We do not overrate the capacities of our machines.

Write for catalogue and prices

Hendley & Whittemore Co.
100 S. State St., Beloit, Wis.



Beaudry Hammers

For General Forging

**Saves Fuel, Time and Labor.
Cuts Forging Costs in Two.**

Belt or Motor Driven

Beaudry & Co., Inc.

45 Bromfield St., Boston, Mass.

SALES AGENTS

Brown & Kortman Machinery Co., Pittsburgh, Pa.; Eccles & Smith Co., Inc., San Francisco, Los Angeles, Cal., Seattle, Wash.; English Tool & Supply Co., Kansas City, Mo.; The E. L. Easley Machinery Co., Chicago, Ill.; Milwaukee, Wis.; The H. S. Gray Co., Honolulu, T. H.; Alfred Herbert, Ltd., Calcutta, India, Yokohama, Japan; The W. M. Pattison Supply Co., Cleveland, Ohio, Detroit, Mich.; Feden Iron & Steel Co., Houston, San Antonio, Fort Worth and Shreveport; Portland Machinery Co., Portland, Oregon; Salt Lake Hardware Co., Salt Lake City, Utah; Sherrett & Stoer Co., Philadelphia, Pa.; Oliver H. Van Horn Co., New Orleans, La.; Vonguet Machinery Co., Indianapolis, Ind.; Hendrie & Bolthead Mfg. & Supply Co., Denver, Colo.; Edward J. Nell, Manila, P. I.

**Do the Machines You Build Require
Hollow Bored Forgings
and Steel Shafts?**



**If so, it may pay you to submit your blue prints
and let us quote you on such items as Lathe
Spindles, Piston Rods, Rams, Clutch Shafts, etc.**

Service You Can Depend On

**American Hollow Boring Co.
Erie, Penna.**

It's the
BLOW
that counts

Nazel Air Hammer

Six Sizes

Belt or Direct
Motor Drive



More Forgings—Fewer Reheats

After all is said and done, it's the *blow* that counts. In the NAZEL AIR HAMMER it is always under the instant control of the operator, striking hard and fast or slower and softer, as the work may require, with a clinging non-bounding blow which insures more forgings with fewer reheats. This means less power, less fuel, less labor—in a word, *lower operating costs*.

The NAZEL is made in six sizes for work up to 7" billets. Belt or direct motor drive. It is fully self-contained, makes its own air as fast as it uses it, and foot-lever control leaves both hands free to handle the tongs.

Write today for the Nazel Hammer Book

Nazel Engineering & Machine Works
Nicetown, Philadelphia, Pa.

The Etna Rotary Swager



**Delivers 50 Blows
And Over Per Second**

Invaluable for the more rapid and accurate reduction of round stock. All work is turned out perfectly circular, without waste of material or defacement.

The ETNA method toughens, solidifies and makes metal more resilient. Beats power hammer production by 500% and upwards.

Regular sizes swage $\frac{1}{4}$ " to $4\frac{1}{4}$ " diameter. Special sizes to order within reasonable limits.

Catalog showing production records sent on request

The Etna Manufacturing Co., TOLEDO, OHIO

The Grant Rotary Rivet Spinner



- ☐ Rolls or swedges the rivet shank.
- ☐ No nerve-racking blows.
- ☐ Result—highly polished rivets.
- ☐ No hammer or tool marks.

Absolutely Uniform Results

**With Soft Copper or Brass
or With The Hardest Steel**

- ☐ Speed—one rivet a second.
- ☐ Operated by a boy or girl.
- ☐ Increases output 500%.

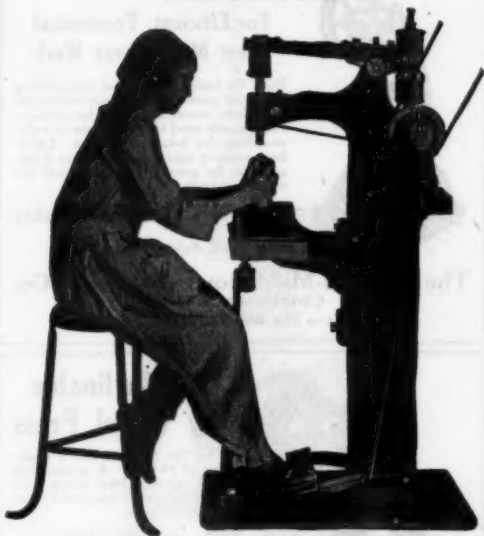
*Let us show you what it will do on
your work. Send us a sample*

The Grant Mfg. & Machine Co.
C. E. Station, Bridgeport, Conn.

Riveting Revolutionized

"The Hammer with the human stroke"

Heads Rivets Cold



Heads 'em tight or loose, flush, countersunk, or finishes heads any shape desired at the rate of:—

A rivet a second, sizes up to 3-16 in.

A rivet in two seconds, sizes 1-4 to 3-8 in.

A rivet in three seconds, sizes 7-16 to 5-8 in.

Built in Eight Sizes

To handle rivets from the smallest, up to 1½" in diameter. Send us sample assembly parts with rivets or sketch of your work, and let US shoulder your riveting problems.

Send for the High Speed Hammer Book

Department 13

The High Speed Hammer Co., Inc.
Rochester, New York

Complete Line of Willard Power Presses

(Inclinable Open Back)



For Efficient, Economical Sheet Metal Press Work

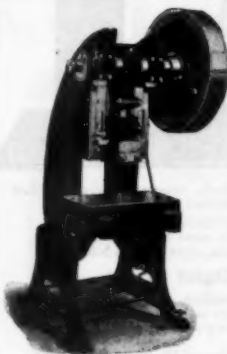
Built for hard service and embodying the latest power press improvements. All parts practically interchangeable. High grade steel shaft capable of withstanding the heaviest strains. Latch has positive safety stop making it impossible for press to "repeat" until the treadle is pulled clear down.

Powerful--Accurate--Durable

Full details on request

The Willard-Middletown Machine Co.
Cincinnati, Ohio

Successors to The Willard Press & Tool Co.



L-J Inclinable Fly Wheel Press

This No. 4 Press has a capacity of 34 tons. It is accurate and rapid. Other sizes; also built in geared head and combination types.

Our Dealers

Herbert Machinery & Supply Co.,
San Francisco and Los Angeles, Cal.
Northern Machinery Co., Minneapolis
Brown-McDonald Mch. Co., St. Louis
English Tool & Supply Co., Kansas
City, Mo.
Stocker-Rumely-Washs Co., Chicago
W. J. Baird Machinery Co., Detroit
Cyril J. Bath & Co., Cleveland, Ohio
Reliance Mch. Sales Co., Pittsburgh
M. D. Larkin Supply Co., Dayton, Ohio
Joseph Beal & Co., Boston, Mass.
Dale Machinery Co., Inc., New York
J. L. Lucas & Son Inc., Bridgeport, Conn.

Write to the nearest, or

Loshbough-Jordan Tool & Mche. Co.
Elkhart, Indiana

Spring Foot Press

Write For Circular



The Taylor & Fenn Company
Hartford, Conn., U. S. A.

Edgemont Friction Clutch

Our engineering department is at your service at all times to advise on the proper clutch installation.

The successful operation of Edgemont clutches is assured when the proper size and type of clutch is selected. By advising our engineering department of conditions, the proper clutch is supplied, fully able to handle the drive. This technical service breeds good will and confidence between "Edgemont" and their customers.

Write for the Edgemont Catalog G

Edgemont Machine Co., Inc., DAYTON, OHIO



*Extended
Sleeve
Plate
'Type C'*

Here Is A Press

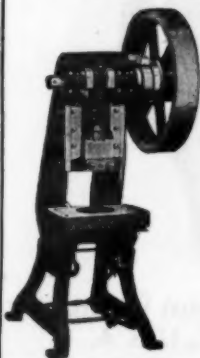
**With Plenty of Steam
Back of THE PUNCH**

**HIGH DUTY
ROCKFORD
PUNCH PRESSES**

Made in straight side and inclinable types. Their great power backed by rigid design enable them to do the work you demand and stand up to it.

Write For Catalog

**Rockford Iron Works
Rockford, Ill.**



Long years of use—

Do not lower the serviceability
of Terrell's Steel Lockers



**They
will be**

giving perfect service
and satisfaction to
both employer and
employee long after
their first cost is en-
tirely forgotten.

"Best in the long run"
means—

**Terrell's
Steel
Lockers**

Besides eliminating repairs and renewals, they reduce insurance and fire hazard, and do away with the annoyance of petty thievery and of vermin. They take up less floor space than do wooden lockers and are more sightly. Their first cost is their only cost, and that may not be as much as you imagine.

Our staff of experienced planners and estimators are ready to serve you with some interesting facts and figures regarding your needs.

Terrell's Equipment Company

Hall & Division Sta., Grand Rapids, Mich.



SAVE spoiled work due to poor lighting; Save half the current; Save eye strain; Save Lamp Breakage.

Increase output by having a good light directly on the work; on the thread you are cutting; in the hole you are boring; right at the spot you are working. Instantly adjustable; stays where it is put.

We will send one of these lamps to any plant or factory on approval.

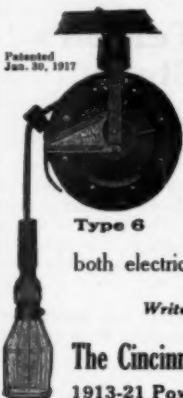
Send for our literature on machine shop specialties.

We make Money Savers.

The Will-Burt Company

Orrville, Ohio

Patented
Jan. 30, 1917



Type 6

both electric lamp and power extensions.

"Autex" Extension Reel

Rapidly finding a place in the largest industrial plants, machine shops, service stations, etc., in the U. S. Used for

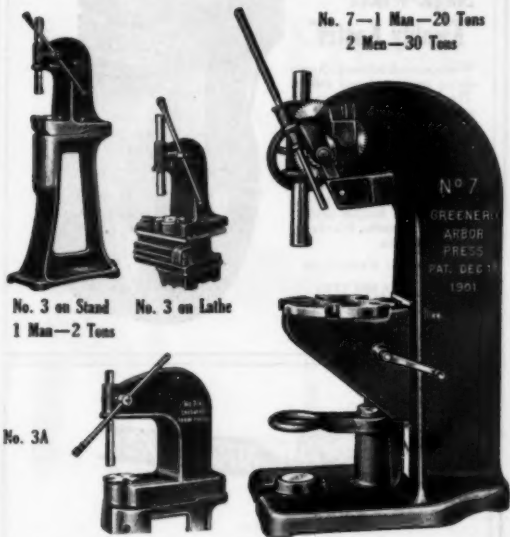
Write for descriptive circular

The Cincinnati Specialty Mfg. Co., Inc.

1913-21 Powers St.,

Cincinnati, Ohio

Why not get the greatest Arbor Press Economy?



No. 3 on Stand
1 Man—2 Tons

No. 3 on Lathe

No. 3A

No. 7—1 Man—20 Tons
2 Men—30 Tons

THE "GREENERD" is a complete line—we can equip you with any size, to deliver pressures ranging from 15 lbs. to 40 tons. And they all have the improvements and refinements of design that have suggested themselves during our 30 years of arbor press manufacturing experience.

"Greeners" are found wherever modern equipment is used and its economical value appreciated

EDWIN E. BARTLETT, Nashua, N. H.

Weigel Single-Wheel "Kwality Kaster"

Will not crush or break. Swivels on steel machined rollers. The best single caster on the market.

Double-Wheel "Trukaster"

Lasts three times as long as others. Easiest running, strongest, and most durable double-wheel caster made. Has heavy plates and axes.

Write for Price List

THE HAMILTON
CASTER & MFG. CO.
HAMILTON, OHIO-



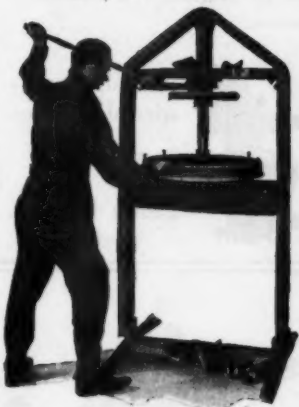
Hitchcock's List

Goes to the Heart of 96% of
the Best Plants in the Country

The above statement is the result of careful mail inquiries directed to thousands of the larger tool-using concerns.

WEAVER

Forcing Presses



are saving time
and money and
improving the
quality of work
in thousands of

Garages
Electric
Shops
Machine
Shops
and
Factories

because of their wide range of application to both
bulky and small work, due to their

Great Depth Adjustment
Quick Release Feature
and Enormous Leverage

enabling the operator to exert a pressure of 28 tons
without assistance. For complete description and
prices, write for catalogue.

WEAVER MFG. CO.

HARVARD PARK,

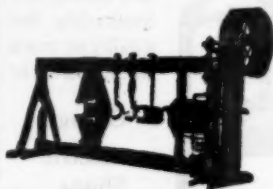
SPRINGFIELD, ILLINOIS



Lourie Hydraulic Presses

Are Known the World Over

We manufacture a complete
line of standard hydraulic
presses.



We also make
special presses.

Write for catalog

Lourie Mfg. Co.
Springfield, Ill.

Atlas Presses

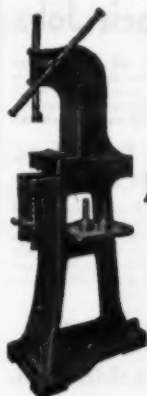
pay for themselves
quicker today than
ever before.

Built in all sizes for all
work which can be
practically accom-
plished by hand.

Atlas Press Co.

Kalamazoo, Mich., U. S. A.





**Put
your tools on this
handy shelf**

No need to lay your tools on the floor if you're using a NICHOLSON ARBOR PRESS; the stand is fitted with this handy shelf for your convenience—an exclusive NICHOLSON advantage. Strength, endurance, convenience—all are combined in these Nicholson Arbor Presses. Made in five sizes for every kind of machine shop and garage work.

NICHOLSON Expanding Mandrels

Would you keep a separate wrench on hand for every nut that is used? Hardly! One monkey-wrench will handle dozens of different-sized nuts. Then why have a separate mandrel for each job? NICHOLSON EXPANDING MANDRELS (nine to a set) fit any hole, round or square, $\frac{1}{8}$ " to 7".

Get details of 30-day trial offer

W. H. Nicholson & Co.
117 Oregon St., Wilkes-Barre, Pa.

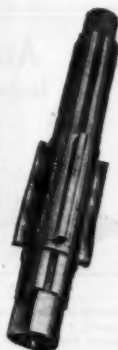
AGENCIES:

BURTON, GRIFFITH & CO., Ltd.
Leigate Square, London, E. C.

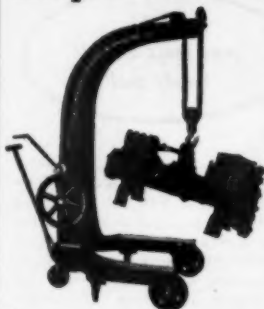
BURTON FILS
65 Rue des Marais
Paris, France

MONTI & OSCURO
Milano, Italy

ANDREWS-GEORGE CO.
16 Takegawa-cho, Kichashi-ku
Tokyo, Japan.



Keep The Men On Their Jobs



DON'T call several men away from their work to lift and lug heavy pieces, when **one man** can do it more easily, quickly and safely with the

Canton Portable Crane, Hoist and Truck

It has well earned the name of "The Handiest Tool in the Shop," for in large shops it is a valuable and always-ready auxiliary to the overhead system, and in small shops it is indispensable.

*Many sizes. Write
For Booklet E-8*

Canton Foundry and Machine Co.
Canton, Ohio

The Anderson Ever Ready Improved Balancing Ways



They are perfectly balanced and always ready. Rotation discs run in chilled iron, ground true on face. They run in specially designed ball-bearings and are extremely sensitive.

Unsurpassed for balancing pulleys, gin brushes, turbine rotors, crank shafts, polishing wheels and fly wheels, etc.

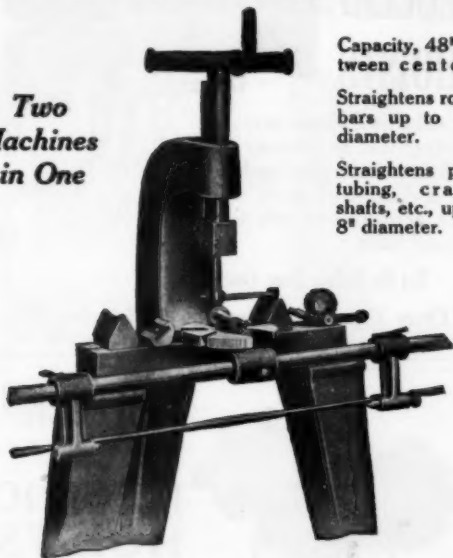
"Swing"	20"	40"	60"	72"	96"
Greatest distance between standards.....	20"	30"	30"	66"	88"
Capacity in lbs.....	1000	2000	2000	5000	10000
Approx. shipping weight.....	45	90	150	350	650
Code.....	Bend	Bid	Bis	Bib	Ben

Can't be beat for saving time, labor and money. Address ?

Anderson Bros. Mfg. Co.
1915 Kishwaukee St., Rockford, Ill.

"Towsley" Arbor Press and Straightening Machine

*Two
Machines
in One*



Capacity, 48" between centers.

Straightens round bars up to 2½" diameter.

Straightens pipe, tubing, crankshafts, etc., up to 8" diameter.

As an Arbor Press it is used for pressing bushings in and out, pressing gears on and off shafts and similar work.

As a Straightening Machine in manufacturing, it takes bends and short kinks out of stock before being turned, permitting light cuts on smaller sizes without leaving low or rough spots. Also adapted to repair work on journals, spindles, shafting, axles, etc., and such special work as bending and straightening tubing, channel, angle and tee iron.

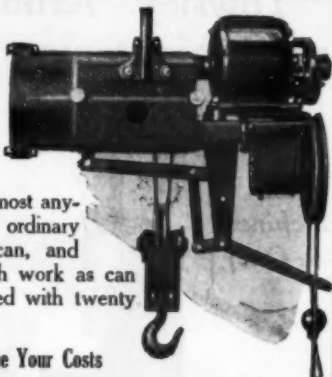
It is well manufactured of high-grade material, carefully fitted and nicely finished like a machine tool.

May we send you description of this many-purpose machine?

JOHN T. TOWSLEY MFG. CO., 1836 Woodrow St.
CINCINNATI, O.

EUCLID HOISTS

can be used almost anywhere that an ordinary chain block can, and will do as much work as can be accomplished with twenty hand hoists.



Let Us Reduce Your Costs

The Euclid Crane & Hoist Co.
EUCLID, OHIO



NORTHERN *Type D* ELECTRIC HOISTS

will eliminate
wasteful labor.

A. C. or D. C. — $\frac{1}{2}$ to 10 Ton

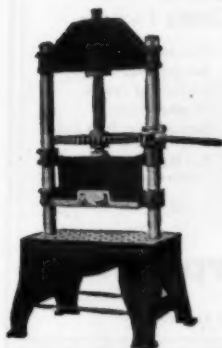
Many other types

**NORTHERN
ENGINEERING WORKS**

208 CHENE ST., DETROIT, MICH.

Makers of "Northern Cranes"

Saves Time of Toolmakers | Rigid, Powerful and Noiseless



Type B Hand Screw Press

The Manhattan is so handy and productive it can be entirely operated by *one man* in die-making. It avoids wasting pulley power thru the keeping of ordinary power presses standing idle during die-making operations.

It also cuts out the cost of the extra men required to adjust power press in the above jobs.

Affords perfect alignment to punch and die. Costs only about *one-tenth* of the price of a power press.



Manhattan Surface Grinder

It has ample power, is accurate to 1000's of an inch, and runs with perfect silence. It is so massively built as to eliminate all chatter. High grade steel spindle runs in large dust-proof, wick-oiled bearings.

It has all the latest adjustments and attachments. Gives clearance where it is most needed.

Unusually compact.

**A Revelation in
Quiet Efficiency**

Two superior machine tools. Want full description?

Manhattan Machine & Tool Works
Dept. A, Grand Rapids, Mich.

Elco Quality Tools—

We manufacture and carry a large stock of the following "Quality" Cutting Tools:—



Plain and Side Mills
Inserted Blade Cutters
Interlocking Cutters
Angular Cutters
Special Heavy Duty Under-
cut Tooth Mills
End Mills, Reamers, Keyway
Cutters and Slitting Saws

*May we quote on your
next order?*

Elco Tool Corporation

720-730 Sixth St.,

Rockford, Ill.

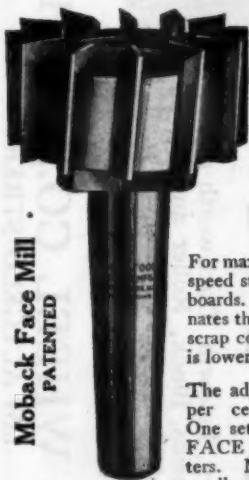
Specialists in Tools, Dies and Fixtures

Second-Hand Wood-Working Machinery

For a large list of used wood-working machinery, consult the **Wood-Working Machinery List**, a publication similar to this but devoted to the advertising of saw-mill and wood-working machines. A copy may be had on application to the publisher, **A. H. Hitchcock, 1220-1235 Caxton Building, Chicago, Ill.**

Moback Cutters

With Inserted and Adjustable Blades
Multiply the Buying Power
Of Your Money



The MOBACK FACE MILL, shown in cut, has a high grade carbon steel holder, and with ordinary care stands up under the most rigorous milling service indefinitely. The cutting blades are made of the best modern high speed steel.

For maximum economy it has solid high speed steel cutters backed clear off the boards. The MOBACK also eliminates the frequent necessity of having to scrap costly solid cutters, and its price is lower.

The adjustability of blades insures 100 per cent increased milling service. One set of blades in the MOBACK FACE MILL outlasts two solid cutters. New blades can be inserted at small cost.

These exclusive improvements are also embodied in both the Moback End and Side Mills. Why indulge longer in the economic waste involved in using the expensive solid high speed steel cutters?

Careful investigation of these superior cost-reducing tools will well repay you. Send postal today.

Moback Tool & Machine Mfg. Co.
330 Atlantic Ave., Boston, Mass.

CULLMAN SPROCKETS

STOCK AND TO ORDER



Diamond, Whitney, Baldwin, Duckworth and
Coventry Chains, Block, Roller and
High Speed Silent types on hand



CATALOG

CULLMAN WHEEL CO., CHICAGO

1359 ALTGELD STREET

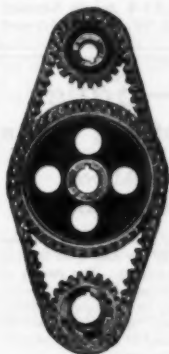
OVER 50,000 MILES
NOW REPORTED ON

“WHITNEY”

High Efficiency

FRONT END
MOTOR CHAIN DRIVES

AND STILL IN GOOD CONDITION

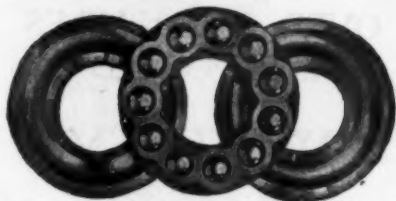


Not one of these
chains has been
known to skip a
sprocket tooth.

Chains having a
high mileage save
inconvenience
and frequent re-
placement ex-
pense.



The Whitney Mfg. Co.
HARTFORD, CONN.



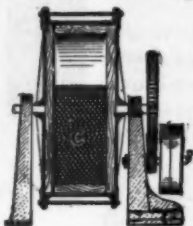
THRUST BEARINGS

*Flat or Grooved Races
from 1/4" Shaft Dia., Up*

ONE BEARING—OR ONE THOUSAND

THE GWILLIAM COMPANY	
BROOKLYN, N. Y.	23 Flatbush Ave.
PHILADELPHIA, PA.	1314 Arch Street
NEW YORK	253 W. 58th Street

Save—Save—Save
75% and Up of Buffing Costs



The Abbott Burnishing Barrel

burnishes by the wholesale at a saving of 75 to 99 per cent over buffing one piece at a time. The quality of the work is superior, without bending, breaking or marring anything. "The Abbott Process" is scientifically developed to the point of perfect burnishing service.

*Write for copyrighted Booklet and send samples for burnishing
All sizes of burnishing balls and soap chips for prompt delivery*

The Abbott Ball Company
Elmwood District, Hartford, Conn.

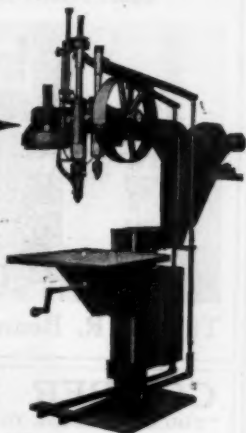
Down Go Screw Driving Costs

75 to 85 Per Cent

Dump a gross or more of machine screws here →

Then press a foot lever, and the machine automatically magazines screws and drives them to desired depth with mechanical precision.

**Several Styles and Sizes
for all requirements
What are YOUR needs?**



The Reynolds Automatic Screw Driving Machine With Magazine Feed

Automatically magazines and drives 8,000 to 10,000 ordinary machine screws a day, as well as hex.-head, square-head and flister-head cap screws, and improves quality of work.

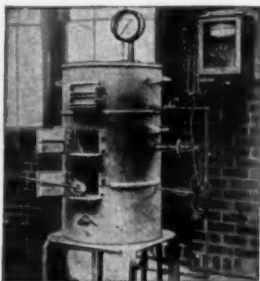
Users of national reputation, having one to a dozen or more Reynolds Machines, report that they save their entire purchase price in a short time—some say in six months, others in four months, or three times a year. A remarkable investment, isn't it?

Tell us dimensions over all of your work, and the gauge and length of screws you are driving, and we will recommend the right machine to cut your costs in two, and then in two again

The Reynolds Machine Company
Dept. H. H., Massillon, Ohio

THE TRIAD 3-in-1 Furnace

Offers Perfect Hardening Service



It not only does all that other hardening furnaces will do—it does *more*, does it *better* and at *reduced cost*. Its construction obviates cold corners, affording perfectly uniform temperature. Burns gas or oil. Burner is not built into furnace—eliminating “back firing.”

Its three heating chambers afford three different degrees of heat: (1) gives 2300 degrees Fahr. for H. S. steel, (2) is for preheating, (3) for drawing the temper.

Cuts fuel costs 65 per cent
Write for Catalog No. 5

The W. R. Bennett Co., P. O. Drawer X
Elmwood, Conn.

COOPER UNIVERSAL JOINTS FLEXIBLE COUPLINGS

“YOU CAN’T BREAK THEM OR WEAR THEM OUT”

Smooth; neat; only 5 simple parts; large oil space; working surfaces case-hardened; no limit to size; guaranteed stronger than shaft at any angle.

6 PATENTS



Three hundred years ago Hooke invented the Universal Joint with fixed centers. Three hundred years have elapsed and still the Hooke type of universal joints are burning up power and breaking in operation.

The Cooper Patented Universal Joint with no fixed centers is just as frictionless as the crosshead of an engine at any angle. “You can’t break them or wear them out” with shaft joints are bored for. Perfect lubrication at any speed.

Sizes $\frac{1}{4}$ " to 2" in stock bored to fit YOUR shafts.

Send for one and try it out

Cooper Flexible Transmission Co., Inc.

1723 8th Ave., Brooklyn, N. Y.

This Tells the Story of Quality—
We Received A \$17,000 Order

After Competitive Tests with 65 Other Makes
On Work which Developed a Maximum Strain



**Borgeson
Universal
Joints**

**Are made
in sizes
from $\frac{3}{8}$ "
to $2\frac{1}{2}$ "**

Any device must have considerable merit to win out in such a test as that outlined at the top of this page. It certainly is worth the investigation of anyone who uses Universal Joints. And that is all we want—to have you *investigate* the Borgeson, which will *demonstrate its splendid qualities purely on its own merits*. It has great torsional strength, has no pivotal pins or parts to work loose, and has the simple and scientific construction throughout which insures the best results under all conditions of service.

Suppose you start the ball rolling now by dropping a line to—

The Borgeson Manufacturing Co., Inc.
Torrington, Conn.

Clough's Quality Gear Cutters



Patent Duplex Gear Cutter

One pair of these Cutters, shown at the left, cuts every size gear from 12 teeth to a rack of same pitch. Gears run with B. & S. Involute. Regular pitches kept in stock. Special Cutters to order.

Single Cut Bevel Cutter

This Single Cut Bevel Gear Cutter, shown in illustration at the right, cuts good, strong, smooth running gears at one cut or operation. Made for any pitch or number of teeth.



Write for Small Tool Catalog

R. M. CLOUGH, Meriden, Conn.

Can You Equal This Easy-Lock Holder and Counterbore Cutter



—for top-quality cutting service? To adjust it you don't have to waste time hunting round for wrenches, hammers or wedges. *One simple twist secures cutter in the holder.* Cutters can be used up to $\frac{1}{2}$ of their length. Adapted also for screw machines and turret lathes. How's that for saving time, labor and good dollars?

Send for our Illustrated Folder

Manufacturers Machine Products Co.
1320 Mt. Elliott Ave., **Detroit, Mich.**

HEAT TREATING

so vitally important to the lasting success of sales-work—

—yet a matter demanding the most painstaking nicety and accuracy—

—cannot be safely entrusted to antiquated or makeshift equipment.

No other department demands such prompt response to every progressive improvement as the heat-treating department.

A competitor better equipped for better heat-treating holds you at a serious handicap.

An S-C-H survey of your department and a recommendation of possible improvements aimed at lower cost, higher standards or greater volume will place you under no obligation.

**THE STRONG, CARLISLE
& HAMMOND COMPANY**

CLEVELAND, OHIO

Branches:

Boston New York Chicago Philadelphia Detroit



Thorofine GEARS

NOTHING TOO SMALL - NOTHING TOO INTRICATE

THOROFINE GEARS ARE GEARS OF EXCEPTIONAL ACCURACY.

LARGE GEARS

Made with the same care that has given Thorofine small gears their unusual reputation. Our Quotations will interest you. Write today.

MERKLE-KORFF GEAR CO.

Formerly Modern Tool & Stamping Co.

313 So. Clinton St.,

Chicago, Ill.



Stranahan

STANDARD

Steel, Iron
and Rawhide

Gears

Sprockets, Worms,
Spirals and Internals

We Make Gears as Specified

Let Us Submit Prices

STRANAHAN GEAR CO.

17th and Wood Sts.,

PHILADELPHIA

For greater efficiency and uniform, reliable results, use



for your case hardening

It's a scientifically prepared, uniform, *non-poisonous* material, which is so much better than cyanide in results, economy and safety, that the latter is promptly "ditched" wherever Ferro Case has been tried.

Made in Two Grades

Ferro Case M is for use in any style or make of cyanide melting furnace, and is handled in the same manner.

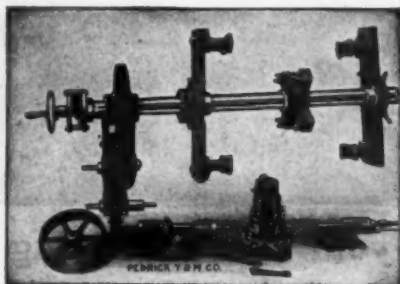
Ferro Case S is sprinkled upon the red hot steel or iron, for which it has no equal, as we would like to show you.

Be sure to specify which grade is wanted. At present we can make delivery of either grade in any quantity. Let us have your inquiry.

C. G. Buchanan Chemical Co.

Cincinnati, Ohio

Pedrick Portable Tools



Portable Cylinder Boring Bars

For reboring in position locomotive cylinders and piston valves, cylinders of stationary engines, steam hammers, air compressors, and a wide range of other work. Often it finishes a job before it could be gotten into the shop, saving time, expense and costly delays. Its saving on work that is difficult to move is out of all proportion to its moderate cost.

As for durability, we doubt if you can wear out a Pedrick built bar. Many machines we made 25 years ago are still in use.

We also build Floor Type Boring Machines, Crank Pin Turning Machines, Pipe Benders, Portable Milling Machines, etc.

Write for copy of new catalog

Pedrick Tool & Machine Co.

3644 N. Lawrence St., Philadelphia, Pa.

"Great Producers"

T.H.L. Front Lever Bench Punch

**Stands Up Under
Longest, Toughest
Wear and Tear**

Price \$60

Extra Punches, 35 cents each,
\$3.75 per dozen. Extra Dies,
40 cents.

Capacity $13/32''$ hole thru $1/4''$
steel, or $11/32''$ thru $5/16''$ steel.

Weight 70 lbs.

Adjustable gauge. Cannot lose
alignment with die. Made of best
materials. All parts interchange-
able.



Durable Punches and Dies

The best high grade steel, and
individual tempering of each
tool by the most efficient work-
men account for the wide rep-
utation they have for maxi-
mum hardest service.

*Give them a try-out
You'll be satisfied*

T. H. Lewthwaite Machine Co.
417 East 31st St., (Est. 1890) New York City

Underwood Rotary Flue Cleaner

Works Fast and is Almost Noiseless



"An expense
reducer"

No. 1 Machine
Cleans
1½ to 3" Flues

No. 2 Machine
Cleans
3 to 6" Flues

WITHOUT INJURY to the flues, the Underwood removes the hard, adhering crust of lime at the rate of 8 to 10 ft. a minute. Hence its popularity with railroad and shop men. The arrangement of the tool steel cutters, which give a little in oval places or with uneven diameters, helps to produce highly satisfactory results.

It is easily operated by ordinary labor, reverses easily and makes but little dust. It's a sure saver of time, labor and money.

It pays to have handy our Catalog of Portable Tools, describing:—

Millers; circular planer tools; radius planers; rotary planers; machines for truing eccentrics, facing domes, arms for facing cylinder flanges; rotary flue cleaners; pipe benders; locomotive cylinder borers; boring bars for lathe work; crank pin turners; reflex water glass grinders; and special machines built to order.

H. B. Underwood Corporation

1015-25 Hamilton St., Philadelphia, Pa.

Second-Hand Machinery

Lists of Second-Hand Machinery, either for sale or wanted, set in uniform style, will be published under this heading at the rate of **50 cents a line**, across the page, each issue, plus **\$2.50** for name and address. Minimum charge, **\$5.00**. No display permitted in this department.

Write directly to those offering the machines for sale for prices and full descriptions. If what you seek is not listed, use the blank enclosed to make known your wants to the publisher, who will pass them along to all Machine Tool List advertisers.

FOR SALE BY

J. L. Lucas & Son, Inc., - - 3 Fox St., Bridgeport, Conn.

Boring mill, Oakland horizontal, complete and in excellent condition. \$1,250.
 Drill, 24" Blaisdell, b. g., round and square tables. 225.
 Press, DG-54 Ferracute, b. g., 2" stroke, complete. 895.

FOR SALE BY

W. H. J. Fitzgerald Co., 165 High St., Boston, Mass.

Three Keyseaters, No. 0 Colburn (Baker Bros.)
 We also have Heald Cylinder Grinders, Gear Cutting Machinery and Hand Automatic Screw Machines. Send for list.

FOR SALE BY

A. A. McLaughlin & Co., 24 West Second St., Cincinnati, O.

Hammer, Beaudry 160 lb., belt driven \$300.
 Lathe, Niles 24"x12", has chuck and face plate. 750.
 Lathe, Mueller 16x6' high speed 175.
 Lathe, Fox 14x5' screw cutting. 125.

FOR SALE BY

Fred C. Dickow Machinery Co., - 3508 W. Lake St., Chicago, Ill.

Drill press, 14" two-spindle Barnes manufacturers' \$ 150.
 Grinder, 16"x36" No. 2A Cincinnati universal, like new. 1400.
 Precision lathes, Ames, comp. rest, countershaft, new. 195.
 Turntable lathe, 20" swing Pratt & Whitney, 24" thru spindle. 1400.
 Engine and speed lathes, drill presses, hack saws, grinders, etc.

FOR SALE BY

Wayne Machinery Co., Fort Wayne, Ind.

Branches: 18 W. 2nd St., Dayton O. 121 S. 3rd St., Louisville, Ky.

Carwheel borer and facer, 30" Sellers.	Punch, 5' mult., Bertsch, 6" gap.
Gear cutter, 26" Brown & S. No. 3.	Shear, No. 6 Quickwork rotary, 48"
Shear, squaring, 37" Bertsch, 18"	throat, 1" capacity.
gap, cap. 14 gauge, 99% new.	See our large list on other page.

Our Guaranty: Money back if not satisfied.

SECOND-HAND MACHINERY

FOR SALE BY

Brown Machinery Co.,

2323 N. 9th St.,

St. Louis, Mo.

LATHES.

13"x 6' Lancaster, c. r., h. s., new.
14"x 6' Walcott, q. c. g., d. b. g.; new.
16"x 6' Reed-Prentice.
16"x 8' Walcott, q. c. g., d. b. g., new.
16"x 8' Monarch, d. b. g., q. c. g.
18"x 8' Monarch, d. b. g., q. c. g.
20"x 8' Lodge & Shipley; used.
20"x 9' Williams turning lathes.
20"x 10' Walcott, q. c. g.; d. b. g.; new.

20"x 12' LeBlond; used.
24"x 10' Fay & Scott, h. s., used.
24"x 12' Putnam, motor dr.
26"x 8' Walcott plain turning.
26"x 12' Walcott, q. c. g., d. b. g., new.
26"x 12' Wickes, heavy duty, quick change gear, double bk. gear, with taper attachment, new.
26"x 12' Draper, triple geared.

TURRET LATHES.

Foster No. 3, plain head, (7).
Wood Tilted Turret, 1 1/2" cap., (2).
Omar, 16x6, b. g., p. l. with equip.
Gisholt, 16" Type A., b. g., (2).

Wyson & Miles, 24" b. g., p. f., air chuck, (2).
16"x 7' Fulton, b. g., p. l., (4).
14"x 6" S. & K. plain head.

DRILLING MACHINES.

No. 1 Burke, bench, chucks, new.
Henry & Wright single spindle, h. s., 4" cap.
3" Leland Gifford, high speed.
4 spindle Garvin; used.
4 spindle Allen, high speed cap. 29/32.
4 spindle Avey, high spd.; used.
5 spindle Allen, high speed cap. 29/32.
6 spindle Allen, high speed cap. 29/32.
26-spindle Baush.
12" Prentice, p. f., stat. table, used.
21" Hoefler, with taper.

24" Milwaukee, sliding head, back gear, power feed.
20" Champion, s. b., b. g. & p. f., new.
20" Champion, s. b., w. & l., new.
28" Hoefler, with taper.
30" Gould & E., sl. hd., b. g., p. f.
American 4" radial.
American 3" sensitive radial, with tapping attachment.
No. 1 Barnes horiz. radial, d. e.
No. 3 Barnes horiz. radial, s. e.

MILLING MACHINES.

No. 2 American Lincoln, b. g., new.
No. 1 U. S. hand, vise and arbor.
No. 2 P. & W., Lincoln type, used.
No. 1 B Fox hor., h. & p. l., new.
24" Osterlein, universal.
Becker No. 7H Lincoln; used.
Hendey No. 4 Lincoln type, q. c. g.
Foster thread miller.

No. 3 Garvin, hand, used.
No. 3 B Owen pl. hor., with vertical attachment & dividing head, used.
Hendey, Lincoln type, b. g. with q. c. g. to feed, tables 11x30, (6).
No. 6 Whitney, hand; used.
No. 3 Fox, hand & power fd., used.
No. 4 Becker-Brainard, pl., pr. fd.

PRESSES.

Nos. 1, 2, 3, 4 Loshbough-Jordan, o. b. i., new.
No. 1 Greenerd, arbor, used, (9).

No. 2 Greenerd, arbor, used, (6).
Nos. 2 & 3 Geier, arbor; new.
Perfection, 30 ton, arbor; new.

SAWS.

Nos. 1 & 2 Marvel, draw cut, new.
No. 1 Racine, 6x6 high speed, new.

Racine hi-speed, 3 ap., 8x8" used.
Williamson, metal, used.

GRINDERS.

Nos. 1, 2 & 3 Western, d. e., new.
Nos. 1, 2 & 3 St. Louis, d. e., new.
No. 20 Safety E. W. Co., elec. (4).
No. 1 Grand Rapids universal cutter and tool; new.
Wood No. 2 Univ. cutter & tool; used.
Oesterlein No. 2, cutter & tool.

G. R. B-2-T drill grinder.
U. S., electric, 110 v., d. c., bench.
Esaley, cylindrical.
No. 1 American, surface; new.
No. 2 American, surface, new.
14" Besly wet ring grinder.
Wilmarth & Morman B. Pt. drill.

HAMMERS.

25 lb. Rochester helve, used.
Foot hammer, Standish.
800 lb. Lane, dbl. fr., st. forging, used.

No. 50 Star trip hammer, new.
1200 lb. Chambersburg double frame, steam forging, used.

MISCELLANEOUS.

Accumulator, Metalwood, with wts.
Blower, No. 5 American.
Brake, 8" Chicago, steel; new.
Cut-off machines, Modern.
Dying-out machine, 9" Hawkins.
Furnace, melting, Steele-Harvey.
Hoists, air, 4x48" Northern.

Lathe chucks, all sizes to 16" diam.
Motors, 5, 10, 40 & 50 h. p., G. E., 220 v., 3 ph., 60 cy.
Pipe cutter, B. & K., 4" cap.
Pipe mch., No. 76 Forbes, 3", used.
Pipe machine, 3" Borden, hand.
Profilers, No. 12 P. & W., 2 spdl.

SECOND-HAND MACHINERY

Brown Machinery Co.—Continued.

Punch, No. 20 Excelsior, $\frac{1}{2}$ in $\frac{1}{4}$ "
Punch & shear, d. e., 14" throats.
Riveters, Grant and Shuster; used.
Riveter, air, P. & A. swinging.
Shaper, 16" Whipp, sgl. gr.; new.

Shaper, 16" Gould & Eberhardt; used.
Shaper, 17" Smith & Mills, b. g.
Shear, 37" foot gap, Bertsch.
Stake punch & riveter, No. 3 Hilles
& Jones, 5' thr., wt. 16000 lbs., used.

FOR SALE BY

B. C. Allen Machinery Co.,

551 W. Monroe St., Chicago, Ill.

Arbor presses,.....	\$15 to \$100.
Bolt cutter, 3" National.....	350.
Bolt cutter, 4" Reliance.....	975.
Boring mill, 42" Gisholt, 2 hds.	3500.
Brake, 8" steel, 16 ga.....	150.
Brake, 8" power, 16 ga.....	875.
Drill press, 14".....	65.
Drill press, 20" b. g., p. f.....	160.
Drill press, 22" b. g., p. f.....	200.
Drill press, 24" b. g., p. f.....	225.
Drill press, 24" sliding head.....	300.
Grinder, LaSalle Tool.....	110.
Hack saw, No. 7 Atkins, h. s.	100.
Lathe, 12" x 5' Star.....	300.
Lathe, 13" x 5' Willard.....	310.
Lathe, 18" x 6' L. & S., q. c. g.	500.
Lathe, 24" x 14' Davis.....	750.
Miller, Wisconsin hand.....	150.

Miller, No. 34 Fox.....	\$ 250.
Miller, Steptoe plain.....	325.
Miller, No. 25 Becker.....	450.
Miller, No. 12 Pratt & Whitney.....	450.
Miller, No. 4 B. & S. plain.....	750.
Miller, No. 4 Cincinnati plain.....	1000.
Punch press, No. 2 Michigan.....	175.
Punch 24" x 24".....	1700.
Punch press, No. 4.....	600.
Punch press, foot.....	40.
Screw mche., 4" P. & Whitney.....	150.
Shaper, 15" Steptoe.....	290.
Shaper, 16" Q. City, b.g.crank.....	550.
Square shear, 22".....	45.
Square shear, 32".....	75.
Square shear, 36".....	145.
Square shear, 50" power.....	525.
Tinners' rollers, all sizes.....	

FOR SALE BY

W. P. Little Co.,

1616 Columbus Road, Cleveland, Ohio

LATHES.

13" x 6' Prentiss, p. r., t. a.
14" x 6' Blaisdell, e. r.
14" x 6' LeBlond, c. r.
14" x 6' Plain rest.
16" x 6' LeBlond, gap, c. r.

20" x 10' Rahn-Mayer, c. r.
20" x 10' Lodge & Davis, p. r.
24" x 15' New Haven, c. r., t. a.
26" x 9' Bridgeford, q. c. g., (2).
30" x 10' Plain turning.

SHAPERS.

18" Juengst, friction.
20" Kelly, b. g. crank.

DRILLS.

20" Hoefler, b. g., p. f.
20" Prentice, w. & l.
24" Aurora, b. g., p. f., s. h.
28" Aurora, b. g., p. f., s. h.
3-spindle Barnes.

24" Heavy duty.
No. 4 Avey.
3-spindle Fox.
2-spindle Reed.
4-spindle Fox, (6).

MILLING MACHINES.

U. S. hand millers, (4).
No. 1 Brown & Sharpe universal.

No. 4 Hendey Lincoln.
Reed, Lincoln pattern.

GRINDERS.

6" x 32" Norton plain.
Washburn drill grinder.

No. 23 Brown & Sharpe cylinder.
No. 3 B. & S. cutter and reamer.

PUNCH PRESSES.

No. 4 Toledo, o. b. l.
No. 1 Toledo, o. b. l., (4).
No. 63 Consolidated g., s. s.

18" throat Excelsior, $\frac{1}{4}$ " cap.
No. 19 Bliss horizontal dial.
No. 87 Z. & H. presses, (2).

MISCELLANEOUS.

Band saw, 36".
Broach, No. 3-A LaPointe.
Furnace, No. 3 Frankfort.
Riveter, 4" Shuster.
Screw machine, No. 4 B. & O.

Slotter, 8".
Spline miller, 4" P. & W.
Tapper, 8/16" Rickert-Shafer.
Tapping machine, No. 1 Garvin.
Turret, 18" W. & S.

We buy Used Machinery. What have you to sell?

SECOND-HAND MACHINERY

FOR SALE BY

Cyril J. Bath & Co., 1603 St. Clair Ave., N. E., Cleveland, O.
Sales Agents—Surplus Equipment of American Ship Bldg. Co.

Good Tools—Low Prices

BAR STOCK MACHINES AND TURRET LATHES.

1" & 3" P. & W. turret lathes, power cross and long. feed. | No. 1 Warner & Swasey screw mche.
21" & 24" Gisholts, 1 taper attach.

BOLT AND NUT MACHINERY.

3" Landis bolt cutter, late model. | 4" Landis extra long bed, motor drive.
1" Acme, style B.

BORING MILLS.

No. 3 Defiance, horizontal table type, single pulley. | 48" Gisholt, double swivel head, single pulley.
No. 31 Lucas horizontal. | 51" Niles, swivel and turret heads, gear drive.
No. 32 Giddings & Lewis horizontal.
72" Sellers, 2 swivel heads.

DRILLING MACHINES.

2', 3' & 4' American plain radials. | 9' Cleveland wall radial.
4' Western plain, motor drive. | Henry & Wright and Sipp sens.
4' Morris plain, single pulley. | 26" Barnes, sliding hd., tap attach.
5' Fossdick plain. | 28" Silver, sliding head.
6' Drees full universal. | No. 24 three-spdl. Allen drill press.

GRINDERS.

14x50 Norton plain. | No. 2 Brown & Sharpe surface, Heald magnetic chuck.
10x72 Brown & Sharpe plain. | 18" Bryant internal.
No. 3 Landis universal. | 12" Bridgeport, a. c., motor drive.
No. 3 Cincinnati 12x48 universal. | New Yankee drill, motor drive.
No. 2 & No. 24 Brown & Sharpe univ.
No. 13 Brown & Sharpe univ. tool.

LATHES.

12", 14", 16" and 24" Hendey. | 34"x18' Putnam, cone dr., solid spdl.
Gap lathe, Rahn-Larmon, 26x52x12. | 42"x28' Pittsburgh heavy duty, motor drive.
14"x 8' Champion, taper, q. c., d. b. g. | 42"x20' Schumacher & Boye, q. c. g.
16"x 8' Bradford, q. c. g. | 42"x32' New Haven, d. c. motor dr.
24"x14' Boye & E., cone dr., d. b. g. | LeBlond universal crankshaft lathe, latest model.
32"x20' New Haven, b. g., cone drive, solid spindle.

MILLING MACHINES

Nos. 14, 2 and 4 Cincinnati plain. | No. 5-B Becker vertical.
Nos. 3, 3-A and 4-A B. & S. univ. | No. 2 Brown & Sharpe vertical.
Nos. 2 and 3 Kempsmith plain. | No. 12 Brown & Sharpe plain.
No. 3 Kempsmith universal. | Type A Briggs, Lincoln type.
No. 3 heavy duty LeBlond universal. | No. 7-H Becker, Lincoln type.
No. 3 and No. 3-B hvy. B. & S. pl.

PLANERS.

24"x24"x 6' Liberty. | 48"x48"x20' Patch, 4 heads, reversing motor drive.
24"x24"x 6' Gray. | 48"x12' Cleveland openside.
24"x24"x 6' J. B. Pease. | 60"x60"x20' Sellers, spiral dr., 4 hds.
30"x30"x 8' Gray. | 24" Cincinnati crank planer.
30"x30"x 8' Niles-B.-P., box table.
48"x48"x12' Gray, 3 heads.

PRESSES.

D-301 Ferracute, 4" stroke, 32" between housings.

PUNCHES AND PLATE WORKING TOOLS.

16' Hilles & Jones 1/2" plate bending rolls.
Pels universal angle, bar, plate shear and punch.
12" Southwark horizontal punch, 1 1/2"x1 1/2".
84" No. 2 Long & Allstatter single end shear, 1/2".
84" No. A Long & Allstatter single end punch, 1 1/2"x1 1/2".
No. 4-B Quickwork rotary shear, 60" throat, 1/2" plate.

RIVET MAKING MACHINE.

Acme size "A" rivet and track bolt machine, large equipment.

SECOND-HAND MACHINERY

Cyril J. Bath & Co.—Continued.

SHAPERS.

16", 20", 24" & 28" G. & E.
20" & 24" American.

20" & 24" Cincinnati.

SLOTTERS.

10" Newton, cone drive.
18" Newton, cone drive.

18" Betts, cone drive.

MISCELLANEOUS.

Cold saw, No. 11 Higley.
Crankshaft, for No. 774 Bliss press.
Crankshaft lathe, LeBlond universal, latest model.

Keyseaters, Nos. 2 & 4 Baker.
Motor, 3 h. p. Cleveland, a. c.
Motor, 10 h. p. Card, d. c.
Thread roller, No. 4 Manville.

FOR SALE BY

Herman L. Winterer,

943-53 N. Front St., Philadelphia, Pa.

LATHES.

43"x17'4" Bement-Miles.
42"x25'6" Putnam.
42"x26" Johnson d. b. g., t. a.
42"x16" Niles.
37"x14" Johnson d. b. g., q. c. f., t. a.
32"x12" Pittsburgh, heavy duty, q. c. g.
26"x16'6" American, q. c. g.
27"x12" Bullard.
26"x11" Wickes, q. c. g.
28"x10" Niles, q. c. g.
25"x14" Hendey, q. c. g., taper attachment, oil pan, (2).

24"x14' Porter.
21"x8' LeBlond.
20"x8'6" Walcott, d. b. g., q. c. g., (3).
20"x8' Whitcomb Blaisdell, q. c. g.
19"x12' Flather.
19"x10' Draper, patent head.
18"x7' Chard, d. b. g., semi q. c. g.
18"x6' to 8' lathes, (6).
17"x6' Lodge & Shipley, q. c. g.
16" Lathes, (10).
14" Lathes, (19).
And many others.

TURRET LATHES.

43"x6' Lodge & Shipley chucking.
28" Pond, triangle.
3x36" Pratt & Whitney hollow hex.
18"x7' Fay & Scott.

No. 227 Garvin Monitor.
No. 3 Bardons & Oliver, back grd.
14"x4' Warner & Swasey.

DRILL PRESSES.

5' Bickford radial.
5' Prentice radial.
42" Economy radial.
40" Barnes horizontal radials, (2).
36" Bickford radial, circular base, motor driven.
18" 4-spindle 2-housing, Foote-Burt.
14" 6-spindle Allen sensitive.

14" 4-spindle Allen sensitive.
40" Lodge & Davis, b. g., sliding hd.
20" Barnes, geared head.
20" Hoosier, new, (3).
20" Champion, new, (6).
12" Allen, bench.
Plain drills, all sizes.
Drill presses, assorted sizes.

MILLING MACHINES.

35"x8' Ingersoll horizontal slab.
No. 5 Cincinnati, table 9'x50".
No. 15 Garvin, table 12x42".
No. 3 Becker Brainerd, table 12x40".
No. 3 Cincinnati, table 12x47".

Whitney hand miller.
No. 27 Industrial Works, Lincoln type, table, 7x27".
Gooley & Edlund, 7'x16" table.

PLANERS AND SHAPERS.

43"x48"x18' Pond planer, 3 heads.
30"x30"x8' Putnam planer.
28"x26"x6' Hendey planer.
43" Morton draw-cut shaper.

35" Pedrick & Ayer, open side.
30" Cincinnati.
16" Gould & Eberhardt shaper.
14" Warren shaper.

MISCELLANEOUS.

Bolt machine, 1" National.
Boring mill, 100" Sellers, vert. dbl. hd.
Boring mill, car wheel, 60" Newton.
Boring, drilling and milling machine, 17' Bement Niles horizontal.
Grinder, 13"x5" Landis universal.
Grinder, disc, No. 17 Besly.
Grinder, disc, No. 1 Besly.
Hammers, 60 lb. Bellefonte upright; 2.
Keyseaters, 18" stroke Morton, (2).

Keyseater, Mitts & Merrill No. 5.
Keyseater, Mitts & Merrill No. 2.
Punch presses, all sizes, (106).
Punch & shear, Industrial Wks. d. e., capacity 1" in 1", squaring 1"x6".
Slotter, Newton, 20"; cir. table.
Slotter, Newton, 18"; cir. table.
Slotter, Bement 10"; cir. table.
Tooth rounding machine, Schuchardt & Schutte.

Large assortment of General Machinery. Send for Complete List.

SECOND-HAND MACHINERY

FOR SALE BY

J. Bleser Manufacturing Co.,

Springfield, Ill.

Adding mche., 9-column Burroughs.
Chain hoists, Wright 2-ton h. s., new.
Cranes, Whiting overhead, hand pwr.
Crucibles, Nos. 60 and 70, new.
Crucible furnaces, Fisher, fuel oil.
Drills, 20" Barnes and Excelsior.
Drill, bench, with motor, new, \$50.

Drills, 34" and 24" Barnes, sliding hd.
Lathe, 17" LeBlond, rapid pwr., q. c.
Lathe, 20"x8" Monarch, q. c.
Millers, hand, No. 3 Burke.
Oil tank, 8' dia. x 27' long, 9000 gal.
Sand riddle, Champion, and motor.
Snap flasks, Arcade 10x16x4 Cx3D.

FOR SALE BY

The Strong, Carlisle & Hammond Co., Cleveland, O., Detroit, Mich.

ENGINE LATHES.

16"x 8' Lodge & Shipley, compound
rest, patent head.
16"x 6' Hamilton.
17"x 8' LeBlond, 3-st. cone, hvy. duty.

24"x14' Boye & Emmes, c. r., 3-step
cone.
24"x22' Union Machine Co., c. r.

TURRET LATHES AND SCREW MACHINES.

1" Millholland, plain head.
24"x10" Millholland, g. f. h., p. f.
15" Garvin, g. f. h., p. f.
14" Lodge & Davis, plain head.
24" Davis turret boring and chuck-
ing lathe, with forming rest.
22" Lodge & Shipley heavy duty
turret boring lathe.
18" Acme screw mche., p. f. to tur., (3).
28" Gisholt heavy duty turret lathe.

No. 2-A Warner & Swasey g. h.
turret lathes, (2).
No. 3-A Warner & Swasey g. h.
turret lathe, (3).
2"x24' Jones & Lamson g. h. flat
turret lathe.
No. 60 Brown & Sharpe auto., (8).
No. 6 Brown & Sharpe auto., (7).
No. 2 Brown & Sharpe auto., (3).
to # Model A Cleveland auto.

DRILLING MACHINES.

Single spdl. upright sensitive, (2).
24" Baker, hvy. duty, sta. head.

4 spindle Foote-Burt, adjustable
head.

MILLING MACHINES.

Bench miller on column, with c. s.
No. 1 U. S. hand, 3-st. cone., c. s.
No. 15 Garvin plain, b. g.
No. 23 Garvin, vertical spindle.
No. 1 Cincinnati plain.

No. 3 Brown & Sharpe, plain, taper
nose.
No. 6 Becker, vert., rotating table.
12" Pratt & Whitney, horiz., auto.
No. 3 Burke, bench type, hand.

GRINDERS.

No. 10 Cochrane-Bly auto. bench
saw filing machine.
12"x66" No. 4 Landis univ., complete.
No. 1 Brown & Sharpe, univ.
Type "DE" Hisey-Wolf internal.

Gisholt tool grinder.
No. 14-16 Bealy, wet ring wheel.
6"x18" Landis, plain, single pulley
drive.

HAMMERS AND RIVETERS.

No. 3 High speed riveting hammer.
Coffman post pwr. dr. hammer 25 lbs.
Cady belt drop hammer, 100 lbs.

11 1/2" thr. Grant rivet spinning mche.
No. 203 Grant rivet spinning mche.

METAL CUTTING TOOLS & SQUARING SHEARS.

Excelsior power hack saw.
12" Burke metal cold saw.

Higley cold saw.
No. 154 Higley cold saw.

PUNCH PRESSES.

No. 11 Badger, hand.

GEAR CUTTERS.

26" No. 3 Brown & Sharpe auto., (2).
60" Eberhardt, spur.

No. 13 Brown & Sharpe auto., (2).

MISCELLANEOUS.

Boring mche., 22" swing, Star horiz.
Boring mill, 34" Colburn.
Brake, 36" P. S. & W. cornice brake,
20 gauge capacity.
Crane and hoist, Canton No. 3.
Planers, 22"x22"x5' Putnam, 1 hd., (3).
Polishing lathes, City Machine Co.

Press, No. 65-A Consol., s. s., grd.
Press, D-301 Ferracute redrawing
and trimming.
Radial drill, 3" Gang, speed box.
Tapper, 8" Burke, bench.
Tappers, 8" Rickert-S. horizontal.

SECOND-HAND MACHINERY

FOR SALE BY

Niles-Bement-Pond Company,

111 Broadway, New York

Located at our various factories and stores.

LATHES.

22"x 8' Niles, c. r.
24"x10' Whitcomb, q. c.
26"x10' Pond, q. c., 220 v., d. c. motor.
36"x28' & 28"x18' Niles, c. r.
29"x12' & 32"x12' Pond, c. r.
36"x20' Pond, 220 v., d. c. motor dr.
42"x20' Niles, c. r.
48"x30' Niles, c. r.
50"x17' F. B. Miles.
54"x28' American, t.g., 220 v., d. c. mtr.

TURRET LATHES.

No. 6A P. & J. auto., 220 v., mtr. d. c.
1"x10" P. & W. turret lathe.
2"x24" Jones & Lamson, cone head.
2"x26" Pratt & Whitney turret lathe.
24"x36" Pratt & Whitney, turn table.
28" size J. Gisholt, 3 1/2" spindle.
24" size I Gisholt, 220 v., mo. dr., d. c.
32" Conradson turret.
34" size K Gisholt.

PLANERS.

30"x30"x 6' Pond, 2 heads.
30"x30"x12' Pond, 2 heads, 220 v., d. c., reversing motor drive.
30"x30"x10' Pond, 2 heads.
36"x36"x12' Gray, 2 heads.
38"x38"x10' Niles, 2 heads.
38"x38"x12' Niles, 4 heads.
36"x36"x16' Pond heavy, 2 heads, 220 v., d. c., reversing motor drive.
38"x38"x16' Niles, 3 heads.
36"x36"x25' Bement, 4 heads.
42"x42"x14' Pond, 3 heads.
48"x48"x20' Bement, 4 heads.
60"x60"x14' Niles, 4 heads.
60"x60"x20' Niles, 3 heads.
60"x60"x24' Niles, 4 heads.
72"x72"x12' Bement, 4 heads.
72"x72"x20' Ridgway, 4 heads, 220 v., reversing, motor d. c.
10"x10' x36' Betts, 4 hds., 220 v., d. c. mtr.

MILLERS AND GEAR CUTTERS.

No. 5 B. & S. plain cone type.
No. 5 B. & S. vertical, cone type.
No. 3 36"x8" B. & S. gear cutter.
No. 4 36"x20" B. & S. gear cutter.
No. 6 60"x12" B. & S. gear cutter.
15" Gleason bevel gear generator.
6"x48" P. & W. thread miller o. s.
6"x80" P. & W. thread miller o. s.

DRILLING MACHINES.

40" Aurora, tap, attach.
3' Grant radial drill and boring mch.
3' Dreses plain radial.
4' Bickford plain radial.
4' Niles full univ., old style, motor.
5' Ridgway, 220 v., d. c. motor.
6' Niles full univ., 220 v., d. c., m. d.
6' Niles semi-universal, old style.
6' Pond radial, 220 v., d. c. motor.
No. 13 P. & W. multiple 12 spindles.

GRINDERS.

12"x36" Cincinnati, universal.
No. 8 Higley saw grinder.
8"x30" Fraser universal.
10"x72" Norton plain.

BORING MACHINES.

No. 1 Bement horiz., 3 1/2" spdl., 5' tbl.
No. 2 Bement horiz., 3 1/2" spdl., 6' tbl.
No. 2 1/2 Niles horiz., 4" spdl., 6' tbl.
No. 3 Bement horiz., 4" spdl., 9' tbl.
No. 3 Bement horiz., 4 1/2" spdl., 9' tbl.
No. 4 Bement horiz., 4 1/2" spdl., 10' tbl.
42" Niles b. & t. mill.
60" Bement bor. & t. mill.
10' Niles b. & t. mill, 220 v., d. c. mtr.
4 1/2" spindle Niles floor borer.
5" spindle Niles floor borer.
6" spdl. Bement floor boring & drill.
6 1/2" spindle Niles floor borer.

MISCELLANEOUS.

Air compressor, type 10, Ingersoll-Rand, steam driven, capacity 535'.
Air compressor, Ingersoll-R. duplex, mtr. dr. 35 h. p. d. c. mtr., cap. 215'.
Air compressor, Gardner class D, duplex, steam, capacity 837'.
Blower, No. 10 Sturtevant.
Blower, No. 70 Buffalo.
Crane, 3 ton, Niles, 14' 2" span.
Crane, 20 ton, 48' span Sellers, 220 volt, motor direct current.
Engine, 125 h. p., Phila. cross comp. Corliss air compressor.
Engine, 150 h. p. Phila. Corliss.
Engine, 200 h. p. Corliss, twin.
Engine, gen. set, d. c., 220 v., 100 k.w.
Graduating machine, LeBlond.
Hammer, 750 lbs., sgl. frame, Sellers.
Hot blast apparatus, Sturtevant, 120" housed steam fan engine dr., 10 section corrugated base heater 8' 6"x8' 6"x6" high, 440' per section.
Motor, 40 h. p. G. E., type R. C., 1200 r. p. m., 220 v., d. c.
Pump, 800 gal. Gordon duplex, steam.
Saw, 8" rounds, Higley.
Screw shaver, No. 2 P. & W.
Separator, American No. 1, oil.
Slotter, 6" Bement.

SECOND-HAND MACHINERY

FOR SALE BY

Brownell Machinery Co.,

Boring mill, No. 32 Lucas horizontal, motor drive.
Boring mill, No. 1 Lucas.
Boring mill, No. 1 Cleveland.
Boring mill, No. 1 Beaman & Smith.
Drill, 3-spindle Reed Prentice.
Drill, 36" H. & W. radial.
Drill, 28" Hoefler.
Gear cutter, Whiton hand feed.
Gear generator, 11" Gleason, bevel.
Gear shaper, No. 612 Fellows.
Grinder, 10x50 Norton plain.
Grinder, No. 6 Bryant chucking.
Lathe, 12"x 5' Seneca Falls.

11-13 Eddy St., Providence, R. I.

Lathe, 16"x 8' Bradford.
Lathe, 20"x 8' Whitcomb-Blaisdell.
Lathe, 21"x10' Roulsted.
Miller, No. 1 Garvin universal.
Miller, No. 1-B Kearney & T. univ.
Miller, No. 3 Becker vertical.
Miller, Thurston die.
Planer, 17"x17"x4' Whitcomb-B.
Planer, 22"x22"x5' Whitcomb-B.
Planer, 24"x24"x6' Whitcomb-B.
Planer, 30"x30"x8' Whitcomb-B.
Shaft straightener, Rockford, 10' bed.
Shaper, 8" Boynton & Plummer.
Shaper, 20" Ohio.

FOR SALE BY

A. D. White Machinery Co.,

108-114 N. Jefferson St., Chicago

ENGINE LATHES.

14"x 6' Smurr & Kamen.
18"x 7' Chard, d. b. g., p. c.
18"x 9' Bell, d. b. g., p. c.
20"x 8' Hamilton, d. b. g., s. q. c.
20"x 8' Lodge & Shipley, grd. hd.
20"x 8' Reed, s. b. g., p. c.

20"x 8' Reed, motor driven.
22"x10' Davis, d. b. g., q. c.
32"x10' Pond, s. b. g., p. c.
34"x10' Putnam, s. p. g., p. c.
38"x14' Fifield, s. b. g., p. c.

MILLING MACHINES.

No. 0 Rockford, plain.
No. 25 Becker, horizontal.
No. 1 Newton slab.

Model AB Becker, vert., motor dr.
Type "A" Briggs (2).

DRILL PRESSES.

20" Mechanics, friction.
26" Barnes, sliding head.
26" Barnes, sliding head.
26" Aurora, sliding head.

2 spindle Guarantee, h.s., h. b.
4 spindle Reed sensitive, 1/2" cap.
24" No. 24 Foote-Burt heavy duty.
2 spindle 24" Barnes, all grd. gang.

PUNCH PRESSES.

No. 0 American Can.
No. 8 & No. 11 Bliss auto. button presses.

19" throat geared punch.
New Swaine o. b. 1 presses Nos. 27, 29, 31, 33, 35 and 37.

TURRET LATHES AND

No. 3 Foster, plain head.
20"x5' Bridgeport, (2).
20"x8' Fay & Scott universal.
22"x5' Reed.
21" and 24" Gisholts.
3x35" Jones & Lamson.
16"x10' Milholland.
14" Biggs (2).
No. 1 Garvin, hand, (4).
No. 1 B. & S. auto 1/2" (2).

SCREW MACHINES.

No. 3 Stecher, hand, (4).
16"x8' Drees Fox.
18"x6' American Fox.
18"x6' Springfield Fox.
7/16" Cleveland, ratchet feed.
1" Cleveland, semi-auto.
1" Cleveland, friction.
1" Cleveland, jigger.
1" Hartford, (2).
1" Cleveland, jigger.

BOLT CUTTERS AND

14" Acme, double head.
34" Acme single head, (2).
4" Acme single head.

PIPE MACHINES.

4" Saunders (2).
8" Eaton, Cole & Burnham.

MISCELLANEOUS.

Blower, No. 7 Sturtevant, high press.
Boring mach., 24" bar, Binsse horiz.
Gang splitter, takes 21" sheets.
Gang splitter, takes 20" sheet.
Gas engine, 25 h. p. Columbus.
Gas engine, 85 h. p. Bruce-McBeth.
Grinders, No. 2 Woods tool & cutter.
Grinder, No. 2 Oesterlein tool & cut.
Grinder, 10x30 Landis plain.

Grinder, Springfield, 2-wheel wet.
Grinder, Leland & F., wet.
Planer, 30"x30"x10' Pond, 1 head.
Profiler, 2 spindle Putnam.
Riveter, 1/2" Shuster.
Saw, No. 54 Nutter-Barnes.
Screw slotter, Garvin hor. 3/16 to 1/2".
Tapper, No. 3 Garvin, auto.

SECOND-HAND MACHINERY

FOR SALE BY

Russell Machine Co., 28th St. & A. V. R. R., Pittsburgh, Pa.

LATHES.

48"x32' N. B. P., triple geared.
48"x28' Niles, c. r.
48"x26' Pond, triple geared.
36"x18 1/2' Niles, c. r.
28"x12' Boye & Emmes, q. c. g., d. b. g.
26"x12' Pittsburgh, dbl. b. g.
26"x20 1/2' Putnam, b. g., c. r.
26"x16 1/2' Walcott, q. c. g.
24"x16 1/2' Johnson lathe.
18"x 8' Mueller, q. c. g., new.
18"x 6' Bullard, h. s.
19"x16 1/2' LeBlond, motor drive.
18"x 8' Sidney, q. c. g., d. b. g.
18"x 8' Rahn-Mayer-Carpenter.
16"x 6' Columbus, q. c. g., new.
15"x 8' Schellenbach, d. b. g., h. s.
14"x 6' Hendey, q. c. g.
10"x56" Star, foot power.
24"x 6' Gisholt turret, 64" h. s.
24"x 6' Gisholt tur., 64" h. s., m. d.
15"x 5' American brass finishers'.
14"x 5' American speed lathe.
13"x 5' Blount speed lathe.
18"x7 1/2' Wood lathe.

PLANERS AND SHAPERS.

20"x20"x51" planer, 1 hd.
24"x24"x8 Chandler planer, 1 head.
48"x48"x22' Pond planer, 4 heads.
72"x56"x12' Betts planer, 2 heads.
16" American shaper, b. g., m. d.
16" Gould & Eberhardt, b. g.
24" Cincinnati b. g. shaper, m. d.
24" Walcott geared shaper.

DRILLS AND BORING MILLS.

20" Champion, new, pl. w. & l.
20" Silver, new, plain w. & l.
24" Aurora upright, b. g.
36" Snyder b. g. drill.
48" New Haven, b. g. drill.
3', 4', 6' & 7' Prentice radial drills.
8', 6', 4' & 3' Pond radial drills.
9' Baush radial drill.
No. 1 Myers 10" sensitive drills.
10" Dwight-Slate sensitive, floor.
30" Warner-Swasey boring mill.
36" Bridgeport boring mill.
42" Bullard boring mill, 2 heads.
50" Bullard boring mill, 2 heads.
60" Niles boring mill, 2 heads.
90" Niles boring mill, 2 heads.

PUNCHES, SHEARS, PRESSES AND ROLLS.

50" throat Reade sgl. end punch and shear; massive construction.
No. 45 Buffalo punch, 12 1/2".
No. 4 Doelger & Kirsten alligator shear, cap. 48" round soft steel.
Garrison m. d. alligator shear, 15" knife, cap. 3" square, 36000 lbs.
Lewis m. d. alligator shear, 24" knife, cap. 3 1/2" square, weight 50000 lbs.
Morgan plate shear, 98"x1" thick.
Garrison plate shear, cap. 3"x81" m. d.
Mesta plate shear, cap. 4"x156".
Carlin alligator shear, cap. 24" sq.
No. 86 dbl. housing knuckle press.
Stiles Nos. 3 & 23 inc. presses.
Bliss No. 18 o. b. i. power press.
Straight-side trimming press, 6" str.
Straight-side punch press, 4" str.
Bliss No. 7 1/2 s. s., d. g. press, 11" str.
Corry Mch. Co. press, 12" stroke.
No. 116-A Niagara press, m. d.

MILLING MACHINES.

No. 3 LeBlond plain.

No. 12 Garvin plain, 18"x6"x15".

MISCELLANEOUS.

Air compressor, No. 0 Au-To 3"x4".
Air compressor, 8"x8" hor. b. d.
Band saw, Greaves-Klusman 36".
Band saw, Kane-Roach 32".
Bender, Wallace No. 11 angle, hd. pr.
Blower, Root No. 3 Acme, hand.
Blower, Sturtevant, No. 4, volume.
Blowers, Buffalo Nos. 5 and 8.
Boiler, 24"x5 vertical.
Bolt cutter, Landis 14".
Brazing table, all iron, 17"x29 1/2"x31".
Buffer, U. S. elec. spindle 53"x1".
Bulldozer, No. 2 Williams-White.
Bulldozer, No. 4 Williams-White.
Chain belt, 16"x8"x1 1/2" p. and gear.
Cold saw, No. 17 Higley, 30" saw.
Cold saw, Wagner, size 18 type 3.
Cold saw, Gliem, 22" diam. 6" cap.
Crane, 10" I-beam, 12'3" span.
Crimping machine for short work.
Fan, 48" ventilating.
Forge, Nos. 41-43 Champion new.
Grinder, Greenfield cutter & tool.
Grinder, Diamond No. 3 wet tool.
Grinders, Plymouth Nos. 12, 14, 17.
Grinder, Barnes 20" wet tool.
Hammers, 100 & 200 lb. belt power.
Hammers, 2500 lb. Chambersburg, double leg steam forging.
Heading, upsetting and forging machine, 3" National.
Hoist, contractor's steam, with 8 h. p. boiler & 5 h. p. engine.
Index centers, 12" B. & S. univ.
Polishing stand, Diamond No. 2.
Polishing stand, d. end, 42"x8" arbor.
Polishing stand, Cuyahoga dbl. end.
Roll lathe, United Engr. 26"x18".
Ripsaw, table, 49"x30".
Saw, North Wales, hack, 5"x5".
Slotter, Niles 15".
Straightening rolls, 64"x10 Cleveland.
Wiring machines, Pexto, bench.

SECOND-HAND MACHINERY

FOR SALE BY

Frank Toomey, Inc.,

127-131 N. Third St., Philadelphia, Pa.

LATHES.

42" Pond car wheel, motor drive.
36"x16" Sidney, d. b. g., q. c., new.
25"x14" Sidney, d. b. g., q. c., new.
19"x 8" Sidney, d. b. g., q. c., new.

17"x 8" Sidney, d. b. g., q. c., new.
16"x 8" Monarch, d. b. g., q. c., used.
15"x 8" Sidney, d. b. g., q. c., new.
13"x 5' 6" Carroll, s. b. g., p. c., new.

SHAPERS AND PLANERS.

14", 16", 20", 24" Steptoe shapers, new.
7" Rhodes, precision, new shaper.
16x16x42" Walter planer, 1 head.

24"x24"x6" Pease planer, 1 head.
24"x24"x8" Hendey planer, 1 head.
36"x36"x10" Cincinnati, 3 hds., motor.

MILLERS.

No. 0 Steptoe plain, b. g., new.
No. 1 Dow plain, new.
No. 2-A Garvin universal, new.
No. 2 M. U. Garvin univ., new.

No. 2 Putnam universal, used.
No. 4 Brown & Sharpe, plain, used.
No. 22 Garvin vertical, used.
No. 24 Oesterlein plain, used.

DRILLING MACHINES.

48" American pl., speed box, used.
36" Drees plain, cone drive, used.
32" Superior, s. h., b. g., p. f., new.
28" Superior, s. h., b. g., p. f., new.

21" Superior, b. g., p. f., new.
20" Buffalo and Champion, b. g.
16" Canedy-Otto hi-speed, used.
4-spindle Superior hi-speed, used.

MISCELLANEOUS.

Boring mill, 3" bar Binsse, hor.
Boring mill, 42" Bullard, vertical.
Grinder, No. 1 Fraser univ., new.
Grinder, 10"x36" Norton plain, used.
Hack saws, 6x6 & 9x9 Peerless, new.
Hammer, st., 1300 lb. Bement, s. leg.

Keyseaters, Nos. 2 & 4 Catlin, used.
Pipe machines, 2", 4", 6" Oster, new.
Pipe machine, 8" Loew, used.
Press, hyd., Watson & S., 30 tons.
Punch & shear, No. 53 Beloit, new.
Shear, No. 46 Beloit, alligator, new.

FOR SALE BY

Wm. C. Johnson & Sons Machinery Co.,

1001-3-5 N. Sixth St.,

St. Louis, Mo.

LATHES.

18"x 8" Lodge & Shipley.
20"x 8" Lodge & Shipley.
19"x10" Springfield.
24"x12" Schumacher & Boye.
24"x14" Schumacher & Boye.

25"x16" Niles.
27"x18" Springfield.
33"x20" Draper.
54"x16" Putnam.

SHAPERS.

20" Gould & Eberhardt.
24" Gould & Eberhardt.

20" Wetherell, traveling head.

PLANERS.

24"x24"x 6" Liberty.
40"x36"x 8" Powell.
40"x40"x12" New Haven.

32"x32"x10" Sellers, with Adams mill-
ing attachment.

MILLERS.

No. 2 Rockford universal.
No. 9 Kemp Smith plain.
No. 2 Brown & Sharpe universal.

No. 12 Kemp Smith plain.
No. 3 Becker plain.
Owen duplex.

DRILLING MACHINES.

40" New Haven.
24" Foote-Burt.
16" Kern, high speed.

6' arm Prentice radial.
24" Aurora.
22" Barnes.

MISCELLANEOUS.

Boring and drilling machine, horiz.,
No. 2 Pawling & Harnischfeger.
Cold saw, 28" Q. & C.
Engine, Corliss, 12"x30", left hand.
Gear shaper, 36" Fellows.
Grinder, No. 60 Heald.
Grinder, 5"x18" Ott plain.

Grinder, 6"x30" Modern plain.
Hammer, 1100 lb. Morgan, steam.
Marking machine, Mathews.
Screw machines, 14" Foster.
Slotter, 6" Sellers.
Turret, 16" Bardons & Oliver, univ.
Turret, No. 4 Wood.

SECOND-HAND MACHINERY

FOR SALE BY

Cincinnati Lathe & Tool Co., 3207-3211 North St., Cincinnati, O.

CINCINNATI USED LATHES.

One 16"x6' quick change gear.
One 16"x8' quick change gear.
Two 18"x8' quick change gear.

Two 18"x10' quick change gear.
One 18"x14' quick change gear.

FOR SALE BY

Federal Machinery Sales Company.

8 N. Jefferson St., Chicago, Ill. 218 Sycamore St., Milwaukee, Wis.

Used Tools—Very good condition

Drills, multiple spindle, new No. 12 Natco, each with 10 spindles, (2).
Furnace, gas oven, No. 9 Stewart.
Grinder, plain, 6"x32" Norton.
Grinder, No. 24 Gardner vertical spindle horizontal disc.
Lathe, 17"x6' Greaves-Klusman, with d. c. motor.
Miller, plain, No. 14 Rockford.
Miller, duplex, No. 3 Van Norman, new.
Planer, 26"x26"x8' Whitcomb-Blaisdell, two heads.
Radial drill, plain, 34" Western, slightly used.
Screw machine, 1/2" No. 1 Southworth.
Screw machine, 1 1/2"x10" Millholland, new.

FOR SALE BY

Frank H. Parker Company, First Nat'l Bank Bldg., Chicago, Ill.

Air compressor, 8"x12" double vertical.....\$ 500.
Air receiver, 4"x10', new..... 250.
Bending roll, 8', with 4" rollers..... 450.
Boring mill, Binsse, 3" bar..... 1800.
Boring mill, car wheel, 48"..... 800.
Boring mill, 60" Niles horiz..... 7500.
Brake, 8" for No. 8 gauge..... 1200.
Bucket, 1/2 yd. orange peel..... 500.
Bulldozer, No. 4 W. & W..... 1200.
Crane, 2 ton, hand traveler..... 150.
Derrick, 10 t., stiff leg, 40' broom..... 800.
Drill press, 24" back geared..... 180.
Drill, radial, 3' Gang..... 800.
Engine, oil, 15 h. p., F. M..... 150.
Grinder, 30" swing, 22" centers..... 500.
Grinder, No. 60 Heald cylinder..... 1700.
Hammer, 600 lbs. steam..... 700.
Hoist, 5 ton Y. & T. triplex..... 150.
Lathe, 8"x48" Barnes..... 150.
Lathe, 14"x 8' q. c. g. t. a..... 450.
Lathe, Gisholt turret 21"..... 600.
Lathe, 24"x12" Walcott, q. c. g..... 1000.
Lathe, 20"x12", c. r., t. a..... 700.
Lathe, 25"x10" Niles, d. b. g..... 800.
Lathe, 28"x16" Fifeid, c. r., s. s..... 500.
Lathe, 60"x20" Niles, fair..... 1600.
Lathe, pulley, 24" Streit..... 400.
Lathe, pulley, 30" Streit..... 1100.
Lathe, Marvel, 4"x48" L. & S..... 1200.
Milling mche., No. 0 Cin. plain..... 300.
Milling machine, No. 3 Brown & Sharpe univ..... 1700.
Milling mche., No. 2 Cin. pl..... 800.
Milling mche., No. 4 Cin. pl..... 1200.

Milling mche., No. 5 B. & S. pl.....\$1500.
Milling mche., Burke hand..... 140.
Motor, 30 h. p., a. c., G. E., 440 v..... 450.
Planer, 30"x30"x10', 1 head..... 400.
Planer, 24"x24"x5', 1 head..... 700.
Press, arbor, 50 ton..... 125.
Press, double crank, 50 ton..... 800.
Press, No. 202-B Toledo, b. g..... 900.
Press, No. 2 Consolidated, o. b. i..... 300.
Press, No. 924-E Toledo..... 2700.
Press, 7' bet. housings, dbl. cr..... 4000.
Punch, 30" throat, 1 1/2" in 1 1/2"..... 2000.
Screw mche., B. & S. No. 2, hand..... 600.
Shaper, 12" crank, complete..... 280.
Shaper, 20" crank, Smith..... 500.
Shaper, 28" crank, G. & E. fair..... 700.
Shear, 10', for 3/16", with 16" gap..... 2000.
Shear, 50", for No. 11 gauge & 15" gap..... 700.
Shear, Cleveland, with 15" knife..... 800.
Shear, Lennox, 1/2", bevel..... 700.
Slotter, 24" Sellers..... 1100.
Sprue cutter for foundry..... 90.
Steel, 1 1/2"x1 1/2"x16" New Mild, 2c per lb.
Steel, tool, 3" up to 10", all new, 10c per lb.
Tumbling barrel, 26x36x72..... 400.
Welder, spot, 15 k. w., Winfield 500.
Lot of brand new Government surplus cars, axles, bolts, dies, cutters, drills, reamers, lathe bits, collets, chucks, bearings, countershafts, belts, gears, furnaces, sprockets, etc., etc., etc.

SECOND-HAND MACHINERY

FOR SALE BY

Walther Machinery Co.,

629 Main St., Cincinnati, Ohio

Drill press, D-3 Colburn heavy duty, used.
Drill, 8-spindle multiple, No. 4 Morse, used.
Grinder, 5"x18" Ott plain, used.
Lathe, 13"x6" Willard d. b. g., s. q. c., c. d., used.
Turret machines, Steinhilber, without side carriage, rebuilt, (9).

FOR SALE BY

Tranter Manufacturing Co.,

105 Water St., Pittsburgh, Pa.

Gear cutter, B. & S. No. 13 univ.
Grinder, Blount 20", wet tool.
Grinder, Hamilton 20", wet tool.
Hack saw, Millers Falls, 6x6.

Lathe, turret, Bordon, g. g.
Lathe, Wormer 12", speed.
Lathes, Drees & Mueller, b. g., (7).
Turret screw lathes.

FOR SALE BY

The Enterprise Machinery Co.,

28 S. Clinton St., Chicago

Air hoist, (\$25) Ing.-Rand 5-ton \$195.
Boring mill, 48" vertical..... 700.
Boring mill, 36" Niles, 2 hds..... 1300.
Drill, 24" Barnes, b. g., p. f., hvy. 150.
Grinder, Heald No. 64..... 1400.
Grinder, disc, 30", and cup..... 300.
Keyseater, Baker No. 60..... 150.
Lathe, 16"x8" Am. ck., c. r., hvy. 225.
Lathe, 28x14" Rahn Carpenter heavy duty, fine condition... 1100.
Lathe, 49x18" McFarland, b. g..... 1100.
Miller, Cin. No. 1 univ., div. hd. 500.

Miller, Hendey Linc., hvy., 3x30 \$225.
Punch press, No. 3 Walsh..... 315.
Punch press, bench, roller fd..... 160.
Punch, sh. & rod c. 1"x1/2"..... \$250-350.
Radial, Bickford, 3'..... 500.
Radial, Am. 4' high spd., 90%..... 550.
Roll, 20" Wickes, 11/16 drop end 4200.
Roll, 11"x1/2" slip roll..... 2000.
Screw mch., Gridley 13/4, (5) 2500.
Shaper, Walcott 14", swiv. vise 185.
Shear, Lenox 1/2", 90% new..... 375.
500 other tools. Write us.

FOR SALE BY

E. L. Essley Machinery Co., 551-557 Washington Blvd., Chicago, Ill.

DRILL PRESSES.

24" No. 25 Foote-Burt hvy. duty.
4 sp. Allen high speed b. b. drill.

32" W. F. & John Barnes, sl. head.
24" Fosdick plain radial.

LATHES.

18"x8" Whitcomb Blaisdell, q. c. g.
18"x10" Prentice, q. c. g.
20"x14" Putnam.

21"x8" Cisco, q. c. g., d. b. g.
21"x10" South Bend.
30"x14" Niles.

MISCELLANEOUS.

Boring mill, 60" Bullard vertical.
Gear cutter, No. 3 B. & S. auto.
Grinder, 12"x24" Modern plain.
Grinder, No. 1 Sellers, pat. tool.
Grinder, No. 16, 10"x72" B. & S. plain cylinder.
Grinder, 12x48" Cincinnati, cyl.
Grinder, P. & W. vertical surface.
Grinders, No. 10 Besly 18" dbl. disc, (4).
Hammer, 800 lb. W. W., board drop.
Hammer, steam, 800 lb. Massillon.
Miller, No. 33 Kempsmith prod. type.
Miller, No. 2 Milwaukee universal.
Miller, No. 3 Burr, keyseat, routing attachment.
Planer, 32"x32"x8" New Haven.
Planer, 36"x36"x8" Betts.

Planer, 36"x36"x12" Rockford, new.
Planer, 36"x36"x12" Woodward Powell.
Planer, 28"x38"x8" Niles.
Planer, 62"x56"x28" Gray, 2 heads.
Punch pr., No. 4 & 4 1/2 Niagara, o. b. i.
Punch press, No. 4 Toledo, o. b. i.
Punch pr., No. 57 Toledo, st. sd., gd.
Punch press, No. 76 Toledo, o. b.
Punch pr., No. 5 Toledo pl., o. b. i.
Punch pr., No. 74 Bliss, st. sd., gd.
Punch pr., No. 61 Bliss, o. b., reduc.
Saw, Smith & Post cold saw.
Screw machine, No. 6 B. & S. semi-auto, hand.
Screw mch., 3"x2 1/2" Cleveland auto.
Turret lathe, No. 2 Pratt & W.

SECOND-HAND MACHINERY.

FOR SALE BY

Reliance Machinery Sales Co.,

Brighton Road At Pennsylvania Ave., Pittsburgh, Pa.

Bolt cutter, Reliance, 14".
Boring mill, 24" Bullard Rapid Production.
Boring mill, 30" Colburn, turret hd.
Boring mill, 90" Niles, 2 swivel hds.
Drill, 3½" Prentice radial, t. a.
Gear cutter, 15" G. & E. comb.
Lathe, 14"x6" Sidney, quick change.
Lathe, 18"x8" Lodge & Shipley, q.c.g.

Lathe, 26"x10"x6" Walcott, q. c. g.
Lathes, 24"x26" Greenlee, cross feed.
Miller, 30"x30"x9" Ingersoll, 2 hds.
Pipe machine, Jarecki, 1" to 4".
Pipe machine, Cox, 2" to 6".
Pipe machine, Merrill, 2½" to 12".
Press, No. 86 Niagara cam drawing.
Riveter, ¾" Shuster.
Shaper, 24" Stockbridge, p. d. f.

FOR SALE BY

A. M. Stoehr Machinery Co., 844-846 North Wells St., Chicago, Ill.

Only Used Machinery of the Better Class.

Bending rolls, 52", b. g., slip end.
Butt welders, No. 6, No. 9, No. 10A6 and No. 10A7 Thompson.
Cold saw, No. 5½ Nutter-Barnes.
Compressors, steam & belt drive.
Drill press, 20" Champion, b.g., p. f.
Drill press, 20" Barnes, 4-spindle, power feeds, back geared.
Drill press, 36" Cin'ti, b. g., sl. hd.
Drying machines, no dust.
Electric tool post grinder, Dumore.
Gear hobber, No. 3 Barber-Colman.
Grinder, No. 10 Besly, disc.
Grinder, 45" Yates, knife.
Lathe, 16"x8" American, q.c. g.

Lathe, 18"x8" Advance, q. c. g.
Lathes, 50 other sizes and makes.
Milling machines, Wisconsin hand, No. 3½ Fox, No. 25 Becker.
Oil extractor, 26" Troy, bot. disc.
Pipe mch., 6" Jarecki, motor drive.
Press, No. 92½ E Toledo, dbl. crank.
Presses: No. 4 Am. Can, straight side; 500 ton hyd. straightening.
Riveting mche., Shuster, 3/16 cap.
Screw machine, No. 1½ P. & W., 13/16" capacity.
Tapping mch., Tuttle, ¾" cap.
Wire straightener and cut-off mche.
Other machinery; send in your list.

FOR SALE BY

The O'Brien Machinery Co.,

119 N. Third St., Philadelphia, Pa.

Bending rolls, 8", 8" and 6" diam.
Bolt cutter, ¾" Acme, single head.
Bolt cutter, 1" Acme.
Bolt cutter, 3" Acme, single head.
Boring mill, 32" Rogers, turret hd.
Drill, 3½ spindle Baker Bros. heavy duty upright.
Drill, Allen 5-spindle, high speed.
Drill, Allen 6-spindle, high speed.
Drills, Moline heavy duty hog, (3).
Drill, radial, 4" Niles.
Gear cutter, 36" Whiton.
Gear cutter, 36" Gould & Eberhardt automatic.
Hammer, 500 lb. Beaudry.
Hammer, 800 lbs. Bement-Miles, double frame steam.
Hammer, 1200 lbs. Bement-Miles, double frame steam.
Hammer, 2,000 lb. United Engine Co. board drop.
Lathe, 8"x108" Fitchburg Lo-Swing.
Lathe, 16"x7" Pratt & Whitney.
Lathe, 18"x9" Lehman.
Lathe, 20"x9" Lehman.
Lathe, 20"x10" Boye & Emmes.
Lathe, 20"x14" Fowell.
Lathe, 23"x17" Blaisdell.
Lathe, 24"x14" Niles.

Lathe, 30"x21" Putnam.
Lathe, 48"x16" Sellers.
Lathe, 85"x18" Bement.
Miller, No. 1 Garvin universal.
Miller, No. 3 Hendey plain.
Miller, No. 3½ Fox.
Miller, No. 3 Becker vertical.
Pipe machine, 4" Oster.
Pipe machine, 2" Cox, heavy duty.
Pipe machine, 2" Oster.
Pipe machine, 6" Oster.
Pipe machine, 8" Curtis & Curtis.
Planer, 32"x30"x10" Niles, milling head as well as planer head.
Planer, 42"x46"x9" Pond.
Planer, 50"x50"x18" Betts.
Presses, approximately 50, assorted sizes, Waterbury-Farrell Foundry, weights approx. 2,000 to 5,000 lbs.
Presses, Toledo No. 53 straight sided power, 3½" stroke, (7).
Press, No. 47 Niagara, deep throat.
Shaper, 16" Hollingworth, back grd.
Shaper, 18" Hollingworth.
Shapers, 2-12" & 2-15" Springf'd.
Shapers, 12", 20" and 24" Juengst.
Slotter, 12" stroke Bement.
Turret lathe, No. 64 Bardon & Oliver, wire feed, cabinet base.

SECOND-HAND MACHINERY

FOR SALE BY

The Canton Machine Shop Company,

Canton, Ohio

Lathe, 13"x 5' Pratt & Whitney, t. a.
 Lathe, 14"x10' Bradford.
 Lathe, 16"x 8' South Bend.
 Lathe, 14"x 8' Carroll-Jamieson, t. a.
 Lathe, 24"x10' New Haven.
 Lathe, 12"x 5' speed lathe, collets
 and compound rest.
 Metal shingle edging machines, (3).
 Miller, No. 2 LeBlond universal.
 Miller, Brainerd.
 Motor, electric, 5 h. p., d. c.

Paper cutting knife, 5"x36".
 Planer, 26"x26"x6".
 Planer, 48"x48x10' Niles-B.-P., 2 hds.
 Planer, 32"x32"x10' New Haven, 2 hds.
 Punch press, Bliss.
 Punch presses, No. 46 Bliss, weight
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 Radial drill, 3' Fosdick.
 Shaper, 16".
 Wire straightener.
 25 Small grinder heads.

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16 No. 152 Rockwell Rotary Annealing Heat Treating Furnaces

Length of furnace shell 8'
 Dia. inside furnace shell 30"
 Dia. inside lining 18"
 Pitch of thread 8½"
 Length over all 12'
 Height to center of charging spout 4' 10"
 Height over all 6' 6"
 Width over all 5' 10"
 Weight complete 10,000 lbs.
 Oil consumption per hour, U. S. Gal. 4
 Work capacity per hour, 1000 lbs.
 Horse-power required, 1



Price Each	Price Each
\$600.00	\$1,250.00

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2 No. 155 Rockwell Rotary Annealing Heat Treating Furnaces

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 Dia. inside furnace shell 42"
 Dia. inside lining 28"
 Pitch of thread 13"
 Length over all 19' 9"
 Height to center of charging spout 4' 10"
 Height over all 7 feet
 Width over all 6' 6"
 Weight complete 30,000 lbs.
 Oil consumption per hour, U. S. Gal. 8
 Capacity per hour, 2,400 lbs.
 Horse-power required, 2

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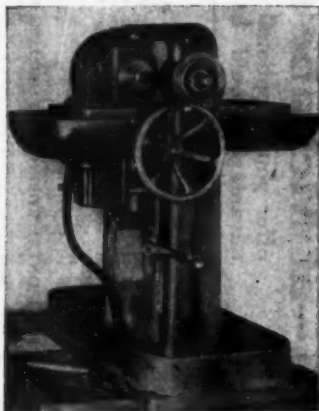
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DIMENSIONS

Traverse feed of table.....16"
Table Surface.....24"x8"
3 T slots for $\frac{5}{8}$ " bolts
Distance between housings ..12 $\frac{1}{4}$ "
Cutter space on arbor.....10"
Maximum distance table to center
of arbor12"

Arbor for No. 11 B. & S. taper
Spindle driving gear.....14"x2"
Ratio of gearing4 to 1
Weight.....2,300 lbs.
Floor space42"x52"
8 changes of feed to table.

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54" Swing, 21' Bed—Pond.
56" Swing, 66' Bed—Johnson, Extra Heavy.
56" Swing, 36' Bed—Johnson, Extra Heavy.
50" Swing, 124' Bed—American Tool Works, Quick Change.
45—26" Swing, 18' Bed, Double Spindle McCabe.
48—26" Swing, 12' Bed, Double Spindle McCabe.
30" Swing, 14' Bed, Bridgeford, Quick Change, Motor Drive, with motor.

PLANERS

48"x48"x15' Pond M. T. Co., 2 heads.
48"x48"x14' Wm. Sellers & Co., 3 heads.
30"x30"x 8' Cincinnati, 1 head.

HORIZONTAL BORING AND DRILLING MACHINES

44" Bar, "Knee Type," Niles Tool Works.
44" Bar, "Knee Type," Bement-Miles.
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3' Bar, "Knee Type," Hetts.
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3x36" Jones & Lamson, Sliding Head, Single Pulley Drive.
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21" Gisholt Gap Style.
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22" Gleason Bevel Gear Planer.

50" Capable of Producing Cast and Draw

RADIAL DRILLS

Upright BORING MILL

"Betts Machine Co.'s" Extension type 10' adjustable to 16' Swing, with two Heads on the Crossrail, complete with countershaft. Inspection can be made—still in operation near Pittsburgh—if prompt action taken.

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- 5' Arm Dresse, Cone Drive.
- 4' Arm Dresse, Cone Drive.
- 4' Arm Cincinnati-Bickford, Speed Box.

MILLING MACHINES

- No. 5 Brown & Sharpe, Vertical.
- No. 2 Cincinnati, Vertical.
- No. 3 Cincinnati, Plain.
- No. 22 Brainerd, Plain.
- Newton Keyseat Milling Machine.
- Hendey-Lincoln Milling Machine, Quick Change.

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- 50" Gap, New McCabe, Single End (Interchangeable). Weight 32,000 lbs.
- 43" (Interchangeable) Hillies-Jones, with motor drive, including Motor.
- 30" Long & Alstatter, Double End, Belt Drive.
- 60" Horiz. Hillies & Jones No. 6, arranged for motor drive, no motor.

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- 16" between housings, New Latest Improved McCabe. Top roll 10 1/2" diam., lower rolls 8" diam. Drop end housings.

NEW RADIAL DRILLS

- 3/4" and 1" with Speed Box, Tapping Attachment, Single Pulley Drive.

NEW SHAPERS

- 14-16" Stroke, Latest Improved, with all vertical feeds to table.

NEW QUICK CHANGE LATHES

- All 3-step cone, double back gears.
- 14" Swing, 8' bed.
- 16" Swing, 4-8-10' beds.
- 18" Swing, 8-10-12' beds.
- 21" Swing, 8-10-16' beds.
- 23" Swing, 16' bed.
- 27" Swing, 14-16-20' beds.
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Immediate Delivery

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| <ul style="list-style-type: none"> 1-59 1/4 Toledo Straight Side Press, dbl. grd., 12" str., tie rod frame, weight 70,000 lbs., spring pressure attachment. 1-59 Toledo Straight Side Press, double geared, 12" stroke, weight 50,000 lbs. 1-No. 666 Toledo Knuckle Joint Embossing Press, cap. 1,000 tons. 1-No. 14 Toledo Horn Press, fly-wheel type, table included. 1-No. 27 Bliss Knuckle Joint Embossing Press, cap. 1,000 tons. 1-No. 2-W Bliss Wiring Press. 1-No. 69-N Bliss Cam, fly-wheel. | <ul style="list-style-type: none"> 1-No. 77 1/2 Bliss Straight Side, double grd., 6" stroke, tie rod. 1-76 1/2 Bliss Straight Side Press, 8" stroke, tie-rod. 1-Long & Allstatter Mult. Punch, 7" shaft, 96" between uprights. 1-D-66 Ferracute Reducing Press. 1-D-65 Ferracute Reducing Press. 1-No. 72 Consolidated Press. 1-No. 65 Consolidated Press. 1-24" Gould & Eberhardt Shaper. 1-No. 4 Williams-White Bull-doser. 1-No. 5 Williams & White Bull-doser. 1-64" Niagara Foot Squaring Shear. |
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Presses, Sheet Metal and Can Machinery.

Grand Rapids Specials

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No. 5 Morse taper, 99% new. | 1—4' Lodge & Davis Plain. |
| 1—5' Universal Radial. | 6—20" Weigel w. & l. feed Drills. |
| 1—4' Universal Radial. | 4—Hoefler Drills, 21", 24", 26", 28". |

Grinders

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| 2—10x36" Thompson Full Univ. | 1—No. JA Yankee Drill Grinder. |
| 1—No. 2 Manhattan Surface. | 1—Used No. 2 Woods Cutter. |
| 1—Grand Rapids Drill, 24" cap. | 1—Gisholt Tool Grinder. |
| 3—No. 2 Oakley Univ. C. & T. | |

Shapers

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| 2—16" Streine B. G. (new). | 1—20" Ohio B. G. Crank (new). |
| 4—16" Whipp S. G. Crank. | 1—Each 16, 18, 21, 24" Hollingsworth
B. G. Crank (new). |
| 1—20" Whipp B. G. Crank. | |

Millers

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| 5—Rockford, all univ., Nos. 14-2-24,
3-st. cone, d. b. g., sgl. pulley dr. | 10—No. 32 Kempsmith Lincoln Type. |
| 1—No. 2 American Plain (used). | 2—No. 14 American Plain. |
| 2—No. 1 U. S. Hand Millers. | 1—No. 14 American Universal. |

Presses and Punches

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| 1—No. 2 Pratt & Whitney Forming
and Trimming Press. | 1—Doty Combined Punch & Shear,
grd.; cap about 4x4", with 7" tht. |
| 6—Willard Presses, 2, 3, 4, 5-A Inc. | |

Gisholt Turret Lathes

- 19—24", with 24", 48" and 64" h. s., chucking equip., qck. ret., rapid traverse.

Hand Screw Machines

- 14—No. 2 Smith, rd. collet, 1-1/16" wire fd., auto. chuck, ind. stops to turret.
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Baush Multiple Spindle Drills

- 1—Baush Multiple, arranged for 24 spindles; now with 12 spindles; takes 60"
bet. columns; drills in any circle 12-48" dia.; approximate weight 30,000 lbs.
1—No. 1 Baush High Speed Multiple Spindle, rectangular head 16x20"—ar-
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1—Baush Multiple, arranged and equipped with 16 spindles, No. 1 M. T.

Lathes

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| 4—Ideal Precision Lathes, 7" swing, comp. slide, grinding attachment. | |
| 3—Ames Precision Lathes, 8" swing, compound slide. | |
| 2—12 & 14"x 6" Worcester Tool Room, taper attachment, pan and collet. | |
| 1—Used Blaisdell 22"x10" b. g. Engine Lathe. | |
| 1—Each Sidney Heavy Duty Lathes, 15, 17, 19, 23 and 27" by 6, 8, 10, 12 and
14' beds, d. b. g., 3-step cone, q. c. g. | |
| 1—Each Sidney Medium Pattern Lathes, 14, 16, 18 and 20" by 6, 8 and 10' beds,
d. b. g., 3-step cone, q. c. g. | |
| 1—25"x8" Economy Heavy Duty Single Purpose Lathe, d. b. g., 3-step cone,
c. r., hollow spindle, quick change feed. | |
| 1—12"x 6" Reed. | 1—19"x 8' 6" (looks like Bradford) |
| 2—14"x 6" Monarch, h. s., c. r. | h. s., c. r. |
| 1—17"x 8" Putnam. | 1—17"x 8" Cincinnati, c. r., h. s. |
| 1—15"x 6" Von Wyck, c. r., h. s. | 1—16"x 6" Hamilton, c. r., h. s. |

Planers

- | | |
|------------------------------|----------------------------------|
| 1—24"x24"x 5' Gray, 1 head. | 1—32"x32"x10' Fitchburg. |
| 1—26"x24"x 8' Pond, 2 heads. | 1—40"x40"x10' New Haven, 1 head. |

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21x10 LeBlond, quick change.
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24x14 Schumacher, q. change.
18x14 LeBlond, l. change.
19x12 Greaves Klusman, l. c.
18x8 American, quick change.
30 smaller lathes.

MILLING MACHINES

Nos. 2, 3 & 4 Cincinnati plain.
No. 3B Brown & Sharpe plain.
No. 3B Milwaukee plain.
No. 2G Hendey full universal.
No. 3 H. LeBlond full univ.

GEAR CUTTERS

No. 13 Brown & Sharpe, s. & b.
No. 2 S. & S. gear hobber.
30" Flather auto. spur.
36" Cincinnati auto. spur.
48" Newton gear hobber.

PLANERS AND SHAPERS

24" Cincinnati shaper.
32"x32"x10' Pond, 2 heads.

DRILL PRESSES

36" Gang radial plain.
48" Fosdick plain radial.
20", 22", 24", 30", 36" and 42" drills.
1—No. 1 Baush 8-sp. multiple.

MISCELLANEOUS

Band saw, metal, 30".
Bolt cutter, 1 1/2" Landis.
Boring mill, 72" Betts vertical.
Grinder, No. 60 Heald cylinder.
Grinder, No. 23 B. & S. cyl.
Keyseater, No. 2 Davis.
Moulding mchs., Tabor, (6).
Sprue cutter, No. 141 Toledo.

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JONES MACHINE TOOL CO. 435 E. Pearl St.
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Surplus Machine Tools For Sale

- 1—Cincinnati Planer, heavy duty, 36x36x12 ft., 4 heads, two speed gear box drive.
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- 1—Cincinnati Plain Milling Machine No. 4, cone pulley drive, with vertical attachment.
- 1—Whitcomb-Blaisdell hollow spindle Lathe, 18x8, quick change, triple back geared.

These tools are fully as good as new. Some of them have been in operation only about three months. All machines can be inspected in operation.

Julius Wegner Machine Works, Inc.
63 Mills Street Astoria, L. I., N. Y.

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Exceptionally Reasonable

BUY NOW

- 1—Rochester Floor Type Horiz. Boring Mill, 3 5/16" bar—real bargain.
- 6—No. 5 Cincinnati Plain Millers, rectangular arm, latest type, like new.
- 1—42"x26" American selective triple geared head Lathe, arr. motor dr.
- 2—48"x26" Lodge & Shipley selective tri. grd. hd. Lathes, arr. motor dr.
- 1—48"x16" Lodge & Shipley selective triple grd. head Lathe, motor dr.
- 3—36"x14" Lodge & Shipley selective tri. grd. hd. Lathes, arr. motor dr.
- 1—30"x30"x8" G. A. Gray Planer, 1 head. Excellent. Reasonable.
- 3—6x32 Norton Plain Grinders, overhead countershafts.
- 2—12x72 Norton Plain Grinders, overhead countershafts.
- 11—Pratt & Whitney No. 12 Profilers, excellent, very cheap.
- 1—No. 33 Lucas Horizontal Boring Mill.

8—New 3 1/2"x60" Fitchburg Lo-swing single carriage Lathe, each	\$ 650.
1—60"x26" Niles heavy duty, triple geared, cone drive Lathe	2500.
1—25"x12" LeBlond heavy duty Lathe, taper, excellent condition	1250.
1—52" King vertical Boring Mill, 2 swivel heads, slightly used	4500.
1—42" King vertical Boring Mill, 2 swivel heads	3350.
2—24" Bullard New Era Type Boring Mills, each	2000.
1—New 61" Bullard Maxi-Mill	6800.
2—New 54" Bullard Maxi-Mills, each	6000.
1—Slightly used 16x10 Ingersoll-Sergeant Air Compressor, cap. 700', belt driven	1000.
1—56"x56"x16" Gray Planer, 2 heads on rail, 2 side heads, motor drive	6600.

- 1—24" Ohio back geared Shaper.
- 1—No. 11 Perkins Trimming Press.
- 1—Double End Industrial Punch and Shear, 1" through 1".
- 1—Single End Cleveland Punch and Shear, 2" through 2".
- 3—Model C Becker vertical Milling Machines.
- 1—36" Bickford Radial Drill, cone drive.
- 2—36" Flathers Gear Cutters.
- 1—3-A Cincinnati Gear Cutter.
- 3—No. 12 Barber-Colman Gear Hobbers.
- 1—No. 4 Williams & White Bulldozer.

The Empire Machinery Exchange Co., Inc.
 517-519 Newman-Stern Bldg., CLEVELAND, OHIO

Fully Guaranteed Used Equipment:-

- | | |
|--|--|
| <ul style="list-style-type: none"> 1—Whiton Centering Machine. 2—24" Barnes vert. drill bk. grd. 1—4-spindle Guarantee Drill. 1—No. 1 Hoosier Heavy Duty Drill (new). 1—20" 6-spdl. Barnes Gang Drill. 1—Sigourney Plain Bearing Drill, capacity 3". 1—Pilton Plain Bearing Sensitive Drill, 5/16" capacity. 1—D-4 Colburn Drill. 1—22" 4 sp. Barnes Gang Drill. 1—No. 17 Foote-Burt Drill. 1—No. 12 Modern Grinder. 1—No. 3 Brown & Sharpe Automatic Gear Cutter. 1—No. 13 B. & S. Light Pattern Spur & Bevel Gear Cutter. 1—No. 17 Besly Disc Grinder. | <ul style="list-style-type: none"> 1—6x32 Norton Grinder. 1—36" Fellows Gear Shaper. 1—3-sp. G. & E. Gear Rougher. 1—12x36 Cincinnati Plain cylindrical Grinder. 1—No. 60 Heald Grinder. 1—20x8' Cisco Lathe (new). 1—30x14' Boye & Emmes Engine Lathe. 2—31" Gridley Auto, sgl. spdl. 1—24" Gridley Auto., four spdl. Nos. 52 and 55 National Acme Automatics. Cleveland Automatics as follows:—1", 1 1/2", 2", 2 1/2", 3 1/2", 4" 1—No. 2 Milts & Merrill Keyseater (new). 1—No. 2 Davis Keyseater. |
|--|--|

M. J. Walsh Machinery Co.

141 Sycamore St., Milwaukee, Wis.

Second-Hand Machinery

BORING MILLS.

- Four 24" Bullard vertical turret lathes, 4-jaw chuck, latest pattern.
- Four 30" Bullard vertical boring mills, 3-jaw chuck.
- 30" Colburn vertical, two swivel heads, plain table.
- 50" Baush vertical, two swivel heads, plain table.
- Binsse horizontal, 4" bar.
- No. 1 Pawling & Harnischfeger horizontal.

DRILLING MACHINES.

- Four No. 117 Moline heavy single spindle "Hole Hog."
- No. 310 Baker Bros. high speed heavy duty, with compound table.
- 30" Wm. E. Gang plain radial, swinging table.

GRINDERS.

- No. 17 Besly disc, NEW.
- No. 70 Heald internal.

MILLING MACHINES.

- No. 4 Heudey, Lincoln pattern.
- No. 2 Rockford plain.

PLANERS.

- 60"x60"x12' Gleason, 3 heads.
- 66"x66"x17' Harrisburg, 2 hds.

PRESSES, PUNCHES AND SHEARS.

- Four No. 27 Swaine inclinable presses, new.
- No. 8 Cleveland inclinable press, new.
- No. 2 Thomas open back inclinable.

- Single end motor driven punch and shear, 4x4 or shear 4x4.

MISCELLANEOUS.

- Engine lathe, 54"x24" American, triple geared, good condition.
- Pipe machine, 3" Stoeber.
- Keyseater, No. 2 Baker.
- Turret lathes, 21" Gisholt.

Marshall & Huschart Machinery Co.

17 S. Jefferson St., Chicago, Ill.

Get our prices on these Lathes

- 1—8" Wade Precision Lathe, Q. C., S. B. G.
- 3—14"x 6' Walcott Engine, Q. C.
- 1—16"x 6' Canedy-Otto Engine.
- 2—18"x 8' Springfield Engine, Q. C., D. B. G.
- 1—18"x 8' American Engine, Q. C.
- 1—18"x12' Walcott Engine, Q. C.
- 4—20"x10' Lodge & Shipley Engine, Q. C.
- 1—22"x 8' Lodge & Shipley Engine, Q. C.
- 1—22"x10' Lodge & Shipley Engine, Q. C.
- 1—18"x 8' Simplex Turning Facing Lathe.
- 1—Reed Prentice Semi-Auto. Facing Turning Lathe.
- 4—Lo-Swing Lathes.

We are selling these Lathes at exceptionally low prices to move them quick. Also have big list of bargains in Millers, Drill Presses, Multiple Drills, Grinders, Planers, etc.

What do you need? Write us

Peninsular Machinery Co.
429 E. Jefferson Ave., Detroit, Mich.

A Few Items of Our Large Stock

LATHES.

- | | |
|---|-----------------------------------|
| 4—Gisholt Mfg., 6" hollow spdl. | 24"x16" Lodge & Shipley, q. c. g. |
| Conradson, grd. head, 28"x14". | 16"x 6" Lehmann, q. c. g., taper. |
| Bridgeford, grd. head, 27"x14". | 16"x 6" Monarch, q. c. g. |
| 2—Fitchburg Lo-Swing. | 16"x 6" Bradford. |
| 2—Bridgeford Axle turning, d. e. | 17"x 6" LeBlond Mfg. |
| 2—Bridgeford 27"x9", d. b. g., q. c. g. | 14"x 8" Flather, plain rest. |

MILLERS.

- | | |
|------------------------------|-----------------------------------|
| Kempsmith No. 1 plain. | Becker s. d. vert., rotary table. |
| Becker No. 25 plain. | Briggs type B, 72" trav. table. |
| 5—Hendey No. 4 Lincoln type. | Steptoe plain. |
| 6—Fox No. 3 1/2 automatic. | Becker 7H, Lincoln type. |
| 7—Bristol No. 0 hand feed. | Foster thread millers. |

DRILLING MACHINES.

- | | |
|-------------------------------------|---------------------------------|
| Allen, h. s., b. b., 4-5-6 spindle. | 24" Sibley, s. h., b. g., p. f. |
| Henry & W., h. s., b. b., 3 spdl. | 20" Champion, b. g., p. f. |
| Barr 2 spindle. | 20" Silver, b. g., p. f. |

GRINDERS.

- | | |
|--------------------------------|-------------------------------|
| 2 Fitchburg B, 12"x36" cyl. | 2—Detroit centerless. |
| Yates No. 375, 36" and 48". | Wells universal—Emery Stands. |
| Diamond and No. 2 Am. surface. | Landis cylindrical. |

MISCELLANEOUS.

- | | |
|-------------------------------|-------------------------------|
| 24" Auto. Tool Works Shaper. | Lea Simplex No. 18 Cold Saw. |
| New W.-W. No. 25 Bulldozer. | Davis & H & R 4" Cut-off Mch. |
| Rockford Horiz. Boring Mach. | Toledo Spot Welder. |
| Foster and P. & W. Screw Mch. | Weaver and Greenerd Arbor Pr |

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ST. LOUIS, MO.

"Machinery to our Middle Name"

Money Making Used Equipment

Immediate
Delivery

ENGINE LATHES

- Young 12"x5", elevating rest, with chuck.
Reed 14"x6", compound rest, taper attachment, with chuck.
Bradford 16"x8", q. c. g., c. r., standard equipment.
Fay & Scott 18"x8", compound rest, regular equipment.
Flather 20"x8", compound rest, with chuck.
Perkins 40"x18", compound rest, with chuck.

MILLING MACHINES

- | | |
|--|---|
| Kempsmith No. 1 plain, b. g.,
all feeds auto. | Becker No. 6 vertical, wrk. sur.
60"x18" |
| Burke No. 3 hand, on column,
d. l. att. | Cincinnati 18" plain, b. g., reg.
regular equipment. |
| Becker No. 5-C vert., reg. equip. | Milwaukee No. 1 plain, bk. grd. |
| Cincinnati No. 3 vertical, h. pwr. | Knight No. 2 Comb. Mill. and
Drill., p. f. |
| Cincinnati No. 4 vertical, h. pwr. | Chicago hand, power table feed,
standard equipment. |
| Rockford No. 1 1/2 pl., latest type. | |
| Becker No. 25 pl., with vise & c.s. | |

MISCELLANEOUS

- National 2" Self Opening Die Bolt Cutter.
Grant Semi Universal Radial Drill, 18".
Woodward & Rogers 4-spindle Sensitive Drill.
Blaisdell 24" Back Geared Upright Drill.
Flather 30" Gear Cutting Machine.
Flather 18" Single Geared Crank Shaper.
Whitcomb 24"x24"x6" Second Belt Drive Planer.

GRIDLEY 24" FOUR SPDL. AUTOMATIC SCREW MCH.

LYND-FARQUHAR CO., Dept. G

Quality Machine Tools
BOSTON 9, MASS.

ReMANUFACTURED - (ORIGINATED BY US) - MACHINE TOOLS

EVERY ReMANUFACTURED MACHINE TOOL in our place represents an unusual BARGAIN. A card will bring our latest GREEN LIST containing 2000 machine tools. We welcome inspection of our plant and our process.

LATHES.

- 20-14"x 6' Reed extra heavy plain.
- 1-ea. 14"x 6' & 16"x 6' Father, q. c. g.
- 1-16"x 6' Monarch, q. c. g.
- 6-16"x 6' Reed.
- 12-17"x 6' LeBlond mfg. auto.
- 22-18"x 8' Boye & Emmes, q. c. g.
- 20-19"x 8' LeBlond heavy, q. c. g.
- 13-20"x 8' LeBlond, q. c. g.
- 89-20"x 8' American, q. c. g.
- 3-20"x 10' Lodge & Shipley, q. c. g.
- 26-21"x 10' LeBlond heavy, q. c. g.
- 19-22"x 8' Davenport.
- 8-25"x 10' LeBlond heavy, q. c. g.
- 28-26"x 10' Niles-Bement-Pond.
- 13-26"x 9' Bridgeford, q. c. g.
- 70-26"x 10' Bridgeford, q. c. g.
- 22-26"x 12' Bridgeford, q. c. g.
- 1-26"x 20' Bridgeford, q. c. g.
- 6-30"x 11' American, geared head.
- 1-30"x 20' American, geared head.
- 19-32"x 12' Pittsburgh, q. c. g.
- 2-36"x 14' Johnson, triple geared.
- 1-36"x 19' Johnson, triple geared.
- 15-36"x 30' Pittsburgh, geared head.
- 4-36"x 37' Niles-B.-Pond, trip. grd.
- 4-40"x 12' Ffield, triple geared.
- 1-40"x 18' Ffield, triple geared.
- 2-45"x 24' Pond, triple geared.

DRILLS AND RADIALS.

- 18-6 spindle Allen.
- 3-No. 6-B Henry & Wright sens.
- 1-20" Silver, wheel, lever feed.
- 1-25" Silver, sliding hd., complete.
- 4-3' American sensitive radials.
- 1-6 spindle Barnes, gang.

BORING MILLS.

- 1-ea. 34" and 72" Colburn vertical.
- 1-10' Niles vertical.
- 1-4" bar Niles horizontal.
- 1-Heaman & Smith horiz., 2 heads.
- 1-2 spindle Espen-Lucas, 2 heads.

GRINDERS.

- 12-American drill.
- 1-No. 2 Garvin hole.
- 2-No. 70 Heald internal.
- 1-12"x 36" Landis plain.

- 1-No. 2 Bath surface.
- 1-8"x 48" Thompson surface.
- 2-12"x 36" Landis plain.
- 2-12"x 36" Modern plain.

MILLERS.

- 49-No. 6 Whitney hand.
- 60-Garrigus hand.
- 22-Van Norman hand.
- 60-No. 34 Fox, p. f.
- 1-No. 0 Brown & Sharpe.
- 32-12" Cincinnati mfg.
- 2-No. 4 Cincinnati plain, s. p. d.
- 2-No. 4 Becker vertical.
- 105-No. 4 Hendey Lincoln.
- 25-No. 4 Loew-Victor Lincoln.
- 11-No. 12 Pratt & Whitney Lincoln.
- 50-No. 7-H Becker Lincoln.
- 1-Type B-34" Briggs.
- 2-18" Cincinnati automatic.
- 7-Putnam semi-automatic.
- 1-17"x 10' Newton, 3 heads.
- 1-No. 14 Newton duplex.
- 1-24"x 6' Ingersoll, 3 heads.
- 1-48"x 10' Newton slab.

SHAPERS AND PLANERS.

- 6-26" Niles-Bement-Pond.
- 2-36"x 13"x 14" N.-B.-P., frog & sw.
- 1-56"x 56"x 10' Gray, 2 heads.
- 1-72"x 72"x 14' Niles, 4 heads.
- 1-96"x 72"x 20' Bement-Miles, 4 hds.

TURRET AND SCREW MCHS.

- 1-1" Pratt & Whitney screw.
- 1-No. 2 Brown & Sharpe screw.
- 3-2" Pratt & Whitney screw.
- 8-No. 2 Pratt & Whitney screw.
- 9-No. 2 Warner & Swasey screw.
- 5-ea. Nos. 2 & 3 Foster screw.
- 3-No. 4 Warner & Swasey.
- 17-No. 4 Wood turret screw.
- 2-3-A Warner & Swasey.
- 2-20" P. & W. grd. hd., chucking.
- 33-24" Steidle turret.
- 1-No. 6 Brown & Sharpe screw.
- 4-No. 75, 4-sp. N.-Acme auto screw.
- 2-3x 36 Jones & Lamson, grd. feed.
- 1-3x 36 Acme turret.
- 36-24" Steidle turret.

Write for our Green List describing these and many others

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649 W. WASHINGTON BLVD., CHICAGO, ILL.

New Machinery For Sale

In Stock at Chicago and New York

Lathes

24"x13' Chard, q. c. g., d. b. g.
20"x11' Chard, q. c. g., d. b. g., (2).
20"x10' Wickes, q. c. g., d. b. g.
16"x6' Whitcomb-Blaisdell.
14"x 8' Cisco, q. c. g., d. b. g.

12"x 8' 6" Davis tool room,
6"x30" and 6"x36" Dalton bench.
Full line, Rivett precision bench.
Full line Stark precision bench.

Drilling Machines

3' Wisconsin sensitive radial.
32" Cleveland sliding head.
28" Cleveland sliding head.
25" Cleveland upright.
23 1/2" Cleveland, upright.
23" Snyder upright.
22 1/2" Cleveland upright.

21" Cleveland upright, (5).
20" Wisconsin, all-g geared, (2).
20" Canedy-Otto, upright, (4).
14" U. S.
Belt and motor driven bench.
Van Dorn portable electric.

Boring and Drilling Machines

No. 9 Pawling & Harnischfeger, (2).

No. 12 Pawling & Harnischfeger,

Milling Machines

No. 2-B Fox plain.
Nos. 1-A, 1-B and 6-B Fox plain.

Burke bench.
U. S. No. 1, hand.

Grinders

No. 3 Modern universal.
No. 1 Wilmarth & Morman univ.
Lafayette universal.
10"x32" Ott universal.
No. 103 Rivett internal.
No. 2 Reid surface.
6"x6" Ott internal.

Webster & Perks, No. 2 universal.
No. 1 Norton cutter and tool.
Grand Rapids drill—various sizes.
Partridge floor stands, (all sizes).
Strand electric, flexible shaft.
Dumore, (all sizes).

Shapers

24" Milwaukee.
20" Milwaukee heavy duty.

16" Milwaukee.
7" Rhodes horizontal.

Hack Saws

Peerless, (all sizes).
No. 1 Racine.

6"x6" Starrett.
6"x6" Economy.

Miscellaneous

Arbor presses, Atlas, all sizes.
Buffing machine, No. 2 Blount.
Filing machines, Nos. 2 & 3 Barry.

Press, Lebanon, foot.
Shear, 15-H Lenox, throatless.
Tinner's rolls, Pexto.

USED MISCELLANEOUS

Cold Saw, No. 15 Lea Simplex.
Lathe, 14"x5' Dress Monitor. (2).

Lathe, 24" Steidle turret.

Dale Machinery Co., Inc.

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Used Machinery

For Sale By

Vonnegut Machinery Co.

Indianapolis, Indiana

- 1—36"x22' Lodge & Shipley Engine Lathe, Geared Head, S. P. D., 14' 6" between centers.
- 1—36"x18' LeBlond High Duty Engine Lathe, adaptable direct motor drive only.
- 1—42x42x22' Flather Planer, 3 heads.
- 1—48x48x22' Cincinnati Planer, four heads (practically new).
- 1—30 ton Case Crane, 5 ton auxiliary lift, 75' span, four motors (practically new).
- 1—10' Bertsch Squaring Shear.
- 1—No. 55 Toledo Punch Press.
- 2—No. 74 Toledo Punch Presses.

Second Hand Machine Tools

BORING MACHINES.

4" bar Detrick & Harvey floor type.
No. 2 Beaman & Smith, floor type,
4" spindle, motor drive.
24" bar Bement-Niles horizontal.

No. 1-3" Lucas horizontal.
34" Colburn vertical, turret head.
38" Niles vertical, 2 heads.

DRILLS.

14" Sensitive, two tables.
3-sp. Henry & Wright sens. b. b.
3 spindle Taylor & Fenn sensitive.
20" Prentice Bros. sliding head, b. g.
23" Rockford, tapping att.
24" Pratt & Whitney, b. g. & p. f.
42" Cinn.-Bick. sliding head, b. g.,
p. f., cone drive, tapping att.
No. 1 Rockford horizontal.

20" Baker Bros. style M, 4 h. p. mtr.
No. 310 Baker Bros. heavy duty.
D-2 Colburn, heavy duty.
6-sp. Hendey, pwr. feed to each spdl.
No. 30-12 spindle Bausch multiple.
No. 12-8 spindle Natco multiple.
No. 22-16 spindle Natco multiple.
4" Bickford plain radial.
4" Drees plain radial.

GRINDERS.

3"x18" Norton, plain cylindrical.
6"x32" Norton, plain cylindrical.
10"x48" B. & S. plain cylindrical.
10"x30" Landis plain cylindrical.
No. 18-12"x120" Landis plain cyl.
18"x36" Norton plain, self contained
motor drive.
No. 3 Modern universal.
No. 3-12x40 Modern universal.
10" Garrigus rotary surface.

B. & S., oscillating ball race.
No. 11 Rivett oscillating.
No. 5 Rivett hand feed oscillating.
No. 34 Van Norman internal.
No. 6 Rivett internal.
20" Bealy disc.
No. 6 A Bryant internal.
18" Ney double disc.
No. 60 Heald cylinder.

LATHES.

No. 5 Rivett bench, slide rest.
11x5 Seneca Falls, c. r., p. c. f.
14"x6" Reed c. r., p. c. f., t. a.
16"x8" Flather, q. c. r., p. c. f.
16"x8" Prentice Bros. geared hd., ck.
20"x18" Reed, c. r., p. c. f.
22"x8" Schumacher-Boye, c. r., p. c. f.

22"-24"x8" Lodge & Shipley selective
head, manufacturing.
26"x12" Putnam, c. r., d. b. g.
32"x14" Hamilton, c. r., p. c. f.
38"x20" New Haven, c. r., p. c. f.
56"x24" Wood & Light, c. r., p. c. f.

MILLERS.

No. 14 Garvin plain.
Rivett hand, precision.
No. 2 Cincinnati plain, all feeds.
No. 3 Cincinnati plain, cone drive.
No. 4 Cincinnati plain, all feeds.
No. 2-A Kempamith plain, b. g.

No. 1 Cincinnati univ., cone drive.
No. 14 LeBlond univ., motor drive.
No. 12 Cincinnati univ., cone drive.
Nos. 3 & 4 Cincinnati high pwr. vert.
No. 4-B Becker vertical.
No. 12 B. & S. Manufacturing.

TURRET MACHINES.

16" Acme univ. friction back gear.
20" Steidle heavy duty, geared head.
20x10 Fay & Scott univ. turret lathe.
24x10 Lodge & Davis turret.
24" Gisholt turret, 6" hollow spdl.
Fay automatic turret lathe.
2"x24" J. & L. flat turret, bar equip.

3"x36" J. & L. chuck or bar equip.
4" Bardons & Oliver turret, motor.
No. 24 Garvin screw machine.
No. 3 Windsor w. f. screw mach.
1"-4 spindle National Acme auto.
11"-4 spindle National Acme auto.

MISCELLANEOUS.

Broaching mach., Nos. 4 & 5 J. N.
Lapointe.
Compressor, 8x8 Clayton single air.
Gear cutter, 36"x9" B. & S. spur.
Planer, 24x24x6 Flather, one head.
Planer, 30x30x8 Pond, 2 heads.
Planer, 36x36x12 Cincinnati, 4 heads.

Planer, 36x30x14 Cincinnati, 3 heads.
Planer, 48x48x15 Sellers, 3 heads.
Planer, 60x48x14 Gleason, 2 heads.
Press, No. 72 Ferracute straight side.
Profiler, No. 13, P. & W., 1 spindle.
Shaper, 14" P. & W. crank.
Shapers, 15" and 24" Hendey friction.

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SCREW MACHINES

- No. 4 W. & S., p. i. to turret.
- No. 0 Brown & Sharpe automatic.
- No. 2 B. & S. automatic, 4" cap.
- No. 1 Chicago automatics, 1" cap.
- No. 1 Bardons & Oliver, 1" cap.
- No. 3 Stecher, 1 3/16" cap.
- No. 1 1/2 P. & W., 1" cap.
- 1 1/2" Cleveland auto., model B.
- 1 1/2" Cleveland auto., model B.
- 1 1/2" Cleveland auto., model A.
- No. 82 National Acme 4 spindle.
- No. 515 National Acme 4 spindle.

GRINDERS

- 6"x20" Fitchburg plain auto.
- 12x30" Fitchburg plain auto.
- 12x36" Fitchburg plain auto.
- No. 14 Gardner disc, univ. tables.
- No. 14 Besly disc, univ. tables.
- No. 1 W. & W. Surface.
- No. 1 W. & W. tool and cutter.
- 1 Hartford surface.

MILLERS

- No. 0 Steptoe b. g. plain.
- 20x7x17 Oesterlein b. g. plain.
- No. 25 Bilton b. g. plain.
- No. 3 1/2 Fox hand, p. f., b. g.
- No. 1 1/2 American b. g., p. f., plain.
- 3" & 6" Lees Bradner thread.
- 3" Foster thread.
- No. 12 P. & W., Lincoln type.

DRILLING MACHINES

- 21" Superior, tapp. attach.
- 24" Milwaukee, s. h., p. f.
- 24" Colburn D-4, h. d.
- 30" Bickford, b. g., p. f.
- 42" Wright, s. h., b. g.
- 54" Davis, b. g., p. f.
- 2 spindle Edlund, b. b., h. s.
- 6 spindle Allen, b. b., h. s.
- 12 spindle P. & W. mult., 1" cap.
- 16 spindle P. & W. mult., 1" cap.

SHAPERS

- 14", 16" & 20" Steptoe.
- 20" Walcott.
- 24" Lodge & Davis.
- 24" Queen City.

PUNCH PRESSES

- No. 3 Norton incl.
- No. 3 R. & K., incl.
- No. 17 Bliss, o. b. i.
- No. 18 Bliss, o. b. i.
- No. 4 McDonald incl.
- No. 5 1/2 Walsh o. b. i. 4" str. grd.
- No. 65-N Bliss, double acting.
- No. 68-C 2 Bliss, double acting.
- No. 68-W Bliss, double acting.
- No. 20 Bliss.
- Nos. 58-59-59 1/2 Toledo, s. s.

LATHES

- No. 2 Niles axle, 8' cent.
- No. 3 Niles axle.
- 3 1/2x60, 6x60, 8x60 & 8x108 Lo-Swing.
- 14x6 Filamith, q. c. g.
- 14x6 Reed-Prentice, h. d., oil pan bed.
- 16x7 Oliver tool room, q. c. g.
- 16x8 Gisholt turret.
- 17x8 LeBlond, q. c. g.
- 18x8 Oliver, t. r., q. c. g.
- 20x8 Hamilton, s. q. c. g.
- 24x12 Cisco, q. c. g.
- 24x12 Gisholt turret.
- 24" 20 American, q. c. g.
- 23x24 Putnam standard.
- 28x10 Pond, q. c. g.
- 30x12 Putnam, geared head.
- 30x13 1/2" Oliver, geared head.
- 32x28 Bridgeford, geared head.
- 26x16 Standard, raised to 60".
- 36x22 Bridgeford, geared head.
- 32" Niles car wheel.
- 50x20 Fifield, triple geared.
- 96x24 Fifield, triple geared.

MISCELLANEOUS

- 30" Rogers Boring Mill.
- 20th Century Die Filing Machine.
- No. 404 Oliver Die Filing Machine.
- 6x6 Curtis Compressor.
- 50 h. p. Atlas Steam Engine.
- 100 h. p. Watertown Auto. Steam Eng.
- 50 h. p. Chalmers Lightning Gener.
- Largest stock of machine tools.
- This is only a partial list.

SEND US YOUR INQUIRIES. WE HAVE WHAT YOU NEED.

Priced To Sell Now

BORING MILLS

100" Betts, 3 heads, like new.
76" Betts heavy, modern.
60" Niles-Bement-Pond, hvy., single pulley drive.
80" Bickford, standard, 3 heads, low price.

48" Colburn, 2 heads, modern.
36" Bullard Vertical Turret.
8-24" Bullard Vertical Turret.
3" Horizontal Universal, belt driven.
4" Espen-Lucas Horiz., floor type.
3" Belts, Horizontal, knee type.

DRILLING MACHINES

8' Niles Plain Radial.
6' Baush. Plain Radial, like new.
6' Hickford. Semi-Universal Radial.

4-25" Aurora Upright, s.h., b.g. (new).
5' Niles-Bement-Pond, motor driven.
4' Gang, gear box drive.

DRILLS—Multi-Spindle

4—(NEW) Aurora 28", s. h., b. g.,
p. f., auto. stop.
6 spindle Baush, 1" capacity.
3 & 4 spindle Barnes, 20" gang.

2-sp. Foote-Burt heavy rail type.
4 & 6 spindle Rockford, auto. feed.
4 & 6 spindle Allen, sensitive.

LATHES

60"x20" Fifeild, D. C. Motor Drive.
52"x22" New Haven triple geared,
pulley drive.
60"x17" New Haven Pulley.
26"x14" Putnam triple geared.
36"x12" Pond triple geared.
30"x12" Johnson.

28"x18" Johnson.
20"x8" & 10" American.
20"x8" Lodge & Shipley.
14"x6" Mulliner tool room.
14"x6" Monarch.
12"x5" P. & W.
10"x4" Seneca Falls.

MILLING MACHINES

8—No. 5C Becker Verticals, new,
price right.
No. 3 LeBlond, plain, high duty.
No. 5 Becker-Brainard Plain.
No. 2 Kempsmith Universal.
50"x8" Ingersoll Slab.

No. 25 Becker Plain.
No. 2 Hendey Norton Plain.
No. 14 Hendey Norton Universal.
No. 2 Van Norman Duplex.
31"x5' Newton Vertical Slab.

PLANERS

84"x84"x13' Sellers, 3 heads, belt driven.
48"x48"x14' Powell, 4 heads, reversible motor drive, complete with electrical equipment.
45"x48"x15' Bement-Miles, 4 heads, belt driven.

42"x42"x12' Pond Machine Tool Co.,
2 heads, belt driven.
36"x36"x12' Niles-Bement-Pond, 3
heads.
36"x30"x10' Flather, 2 heads, belt
driven.
30"x30"x8' Gray, 2 heads, parallel dr.

PRESSES

No. 55 Adriance S. A.
No. 512 Bliss, triple action.

No. 1 Farrel straight side, 8" stroke.
D. D. 4 Ferracute, D. A., roll feed.

SHAPERS

2-16" Newark, box table and vise.
4-15" Smith & Mills, box table and
vise.

4-15" Hendey, box table and vise.
3-18" Morton, extra hvy., draw-cut.
18" Fitchburg, traveling head.

MISCELLANEOUS

10' Bement Boiler Plate Rolls.
18" Betts heavy type slotter.
12" New Haven Slotter.
Sellers heavy Punch, 2" capacity.

No. 26 Buffalo Slitting Shear (new).
Newbold Rotary Shear, 4" cap.
10" Newton Slotter (new).

Graves Machinery Exchange

Warehouse and R. R. Siding:
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Jersey City, N. J.

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50 Church St., New York City
Telephone: Cortlandt 665**

IN STOCK

For Immediate Delivery

BORING MILLS

No. 0 Giddings & Lewis horizontal.
60" Bullard, 2 plain heads.

DRILLING MACHINES

16" Cleveland, h. s., b. b. Drill.
6' Gang Radial Drill.
6' Prentice Radial Drill.

GEAR CUTTERS

No. 3 Farwell Gear Hobber.
8" Hercules.

GRINDERS

No. 12 Brown & Sharpe universal.
8"x40" Morse Grinder.
14"x30" Norton Grinder.
No. 12 Modern Grinder.

No. 8 Besly Disc Grinder.
No. 10 Besly Disc Grinder.
Gisholt Tool Grinder.

LATHES

16"x 6' Bradford, compound rest.
14"x 3' Hamilton style "A", taper and relieving attachment.
18"x18' Bradford, compound rest, double back gear.
32"x18' Bradford, compound rest.
PORTER CABLE Mfg. Lathe.

MILLING MACHINES

No. 5 Hendey, Lincoln type.
Taylor & Fenn vertical.
No. 18 Cincinnati plain.
No. 14 Rockford plain.
No. 3-B Milwaukee plain.
No. 3-B Brown & Sharpe.

No. 3 Becker vertical.
No. 13 Brown & Sharpe.
12" P. & W. automatic.
Type "A" Briggs.
No. 32 Kempsmith.

SCREW MACHINES

No. 0 Foster, plain head, automatic chuck and wire feed.
No. 2 Foster, plain head, automatic chuck and wire feed.
No. 1 Pratt & Whitney, automatic chuck and wire feed.

TURRET LATHES

21" Gisholt.
24" Gisholt.
2"x24" Jones & Lamson.
Potter & Johnston.
21" Cleveland, automatic.
14" Warner & Swasey.

PRESSES

No. 6 Eames Arbor Press.
No. 2-A Bliss Double Crank Geared Press.

Stocker-Rumely-Wachs Company

117-121 N. Jefferson Street

CHICAGO, ILL.

151

SIMMONS

PLANERS

- | | |
|--------------------------------------|--|
| 24"x24"x 8' Cincinnati. | 42"x42"x12' Simmons openside, two heads, NEW. |
| 30"x30"x12' Putnam, two heads. | 48"x48"x20' Ridgeway h.-duty, 4 hds. |
| 30"x30"x18' Cincinnati, two heads. | 60"x60"x20' Woodward-Powell, four heads, 35 h. p. motor rev. |
| 42" Newton Rotary, belt or motor dr. | |
| 48"x48"x28' Cincinnati, 2 hds., NEW. | |

RADIAL DRILLS

- | | |
|--|-------------------------------------|
| 6' Pond plain. | 8' Fosdick full universal. |
| 6' Reed Prentice plain, tapping attachment, (3). | 4' Prentice plain, gear box. |
| 8' Niles semi-universal, gear box. | 4' Dreses plain tapping attachment. |
| | 4' Bickford plain. |

BORING MILLS

- 10' Betts Vertical Mill, 15 h. p., var. speed motor.
 12' Bement Extra Heavy Boring and Turning Mill, 2 swivel heads.
 34" Bertram Vertical Boring Mill.
 36" Bridgeport Vertical Boring Mill, one head.
 37" Bullard Vertical Mill, two swivel heads.
 Bement Horizontal Boring Mill.

LATHES

- 90" Putnam Driving Wheel Lathe, bed 15' long, two 90" face plates, d. b. g., ratchet power feed with motor.
 64"x26' Putnam Heavy Duty Lathe, with d. c. motor.
 60"x29'-56' Niles-Bement-Pond, motor drive, NEW, (4).
 48"x28'-56' Niles-Bement-Pond, motor drive, NEW, (8).
 42"x20' Niles-Bement-Pond, motor drive.
 36"x34' Bridgeford geared head, q. c. g., NEW, (6).
 36"x18' Putnam Heavy Duty, Triple Geared Lathe.
 30"x12' High Duty American, geared head, motor drive, with motor, (4).
 27"x24' LeBlond heavy duty, d. b. g., q. c. g., NEW, (8).
 27"x18' LeBlond Heavy Duty, q. c. g., with motor, (8).
 24"x18' LeBlond Heavy, with standard equipment.
 24"x10' American Screw Cutting, complete, motor drive.
 21"x11' LeBlond Lathe, geared head.
 16"x 6' 6" Pratt-Whitney Tool Room Lathe.

MILLERS

- | | |
|---|---|
| No. 1-B Milwaukee universal, with vertical head. | No. 3 Cincinnati high power vert. |
| No. 2 Brown-Sharpe vertical. | No. 3-Standard universal geared head Cincinnati, (8). |
| No. 2 LeBlond plain, complete. | No. 3 Hendey Plain, complete. |
| No. 2 Cincinnati, geared head, high power universal, (4). | No. 5 Brown-Sharpe Vertical. |
| No. 3 Cincinnati high power plain. | No. 4 Cincinnati high duty vertical, with rotary table. |

MISCELLANEOUS

- 96" Gould-Eberhardt Horizontal Gear Hobber.
 84" Gould-Eberhardt Gear Hobbing Machine.
 72" Gould-Eberhardt Vertical Gear Hobber.
 30-Ton Eight Wheel Orton-Steinbrenner Steam Operated Standard Gauge Locomotive Crane, 32' boom.
 32" Cincinnati High Duty Shapers, NEW, (9).
 14"x96" Norton Plain Grinder, NEW.
 Double End Punching and Shearing Machine, Niles-Bement-Pond, 14" cap.
 Note—9000 Horse Power D. C. 230 volt Constant Variable Speed Motors with equipment, 50% to 75% off list.
 Note—400 Steel Lockers in condition like new.

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Albany, N. Y.

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SATISFIED CUSTOMERS

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Presses

TWO No. 666 Toledo knuckle joint, 24" str., 1,000 t. pressure, 80,000 lbs.
Three No. 604 Bliss rack-and-pinion reducing, ad. str. 4" to 42", weight 12,500 lbs.
No. 657 Toledo rack-and-pinion reducing, adjustable stroke 5" to 40".
Two No. 856 Toledo rack-and-pinion reducing, ad. str. 5" to 36".
No. 16 Bliss horning and wiring, 24" stroke, weight 1,250 lbs.
No. 3 Farrell, 14" str., wt. 1,700 lbs.
P-3 Ferracute, 14" str., wt. 3,100 lbs.
DG-5 Ferracute, geared, 3" stroke, weight 6,700 lbs.
Five V. & O. No. 104 dbl.-acting str. of slide 1", stroke of plunger 14".
No. 24 Mansfield dbl.-acting, str. of slide 1", stroke of plunger 14".
Behrendt dbl. acting o. b., grd., str. slide 14", stroke of plunger 3".
Two 7" Geo. A. Ohl power brakes, str. 24", cap. 1" metal, wt. 25,000 lbs.

Saws

6"x6" Racine, high speed.
6"x6" Marvel, h. s., auto. stock feed.
No. 3 Ryerson friction, high speed, capacity 24" I-beams or equivalent, motor drive.

Planers

96"x96"x37' Hewes & Phillips, 4 heads and an auxiliary head.
14' Hilles & Jones plate planer, double tool holder.
72"x70"x14' Sellers, 3 heads, has widening blocks.
48"x48"x14' Patch heavy duty, 4 heads, motor drive, latest type.
42"x42"x14' Pond McHe. Co., 4 bds.
40"x36"x11' New Mche. 1 head.
36"x36"x20' Woodward-Powell, 2 bds.
36"x36"x12' Bickett, heavy duty, 2 heads, motor or belt drive.
36"x36"x12' Bickett, heavy duty, 1 head, motor or belt drive.
36"x36"x16' Detrick & Harvey open side, 1 rail head, 1 side head.
16"x16"x42' Walter Bros., 1 head.
55"x46"x14' Lincoln, 4 bds., for stone.
Two 28" Newton pl. index centers.

Vertical Boring Mills

120" Niles, 2 swivel heads.
80" Niles Bement Pond, 2 swivel hds.
72" Niles, 3 swivel heads.
64" Poole, 2 swivel hds., thread-cutting attachment.
44" Niles, 1 swivel hd., 1 turret hd.
42" Putnam car wheel borer, hub-facing attachment and crane.
36" Niles car wheel borer, with crane.
32" Rogers swivel turret head, universal jaws in table.

Horizontal Boring Mills

Bement cylinder, 8" bar, 12' between facing arms.
Barrett No. 2 cylinder, 5" bar.
Barrett boring and facing, 34" bar, having auxiliary head, set at right angles to main head.
Beaman & Smith No. 2 floor boring, drilling and milling, 4" bar.
Lucas "Precision" boring, drilling and milling, 34" bar, table 45"x30".
Niles boring and drilling, 4" bar.
Betts boring and drilling, 5" bar.
Newark boring & drilling, 4 1/2" bar.
Bement boring & drilling, 2 1/2" bar.
Newark boring & drilling, 3" bar.
Bement boring & drilling, 3" bar.
Bement boring & drilling, 2 1/2" bar.
Barnes drilling and tap, 2 3/16" bar.
Underwood type, 4 1/2" bar, fl. pl. 8x9".

Radial Drills

8' Bickford universal, gear box, agl.-pulley drive.
6' Bickford plain, cone drive.
6' Niles Bement Pond plain, tapping attach., heavy duty, motor drive.
6' Fosdick plain, tapping attachment.
6' Fosdick universal, tapping attachment, gear box.
4' 6" Niles universal.
4' Fosdick plain, tapping attachment, gear box.
4' Gang plain, tapping attachment.
4' Mueller plain, tapping attachment, gear box.

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Back to Lower Prices

In keeping with the spirit of the times and in an endeavor to get back to normal quickly, we are offering our entire stock of used machines and many new tools at sacrifice prices. Do not ask us for a list but specify exactly what you want and we will quote you by return mail or wire, if necessary. The following are a few Machines picked at random from our stock:

LATHES

- | | |
|---|-------------------------------------|
| 9" to 13" Barnes, h. s., cp. r., new. | 20"x10' Hamilton, double back gear. |
| 10"x5' Summit, nearly new, (5). | 24"x12' Fay & Scott. |
| 13-15-16 and 18 O. & S., h.s., c.r., new. | 25"x14' Schumacher & Boye. |
| 16"x8' Columbus, new. | 8"x60' Fitchburg Lo-Swing. |
| 10"x8' Fitchburg, hol. spdl., cp. r. | 21" and 24" Gisholt, turret. |

TURRET LATHES and SCREW MACHINES

- | | |
|--|---------------------------------|
| 24" Steinle, 6 1/2" hol. spdl., grd. hd. | No. 2 Warner & Swasey hol. hex. |
| 1 1/2" Tilted turret hand screw mche. | Nos. 52, 53 & 56 National Acme. |
| 2x24 & 3x36 J. & L., dbl. equipment. | 21" and 24" Gisholt. |

SHAPERS

- | | |
|--------------------------------|-----------------------------------|
| 14" Niles, traveling head. | 24" Walcott, geared. |
| 14" Smith & Mills, crank. | 30" Smith & Mills, geared. |
| 16" Barker, back geared crank. | 16" Springfield, crank, back grd. |

PLANERS

- | | |
|----------------------------------|-------------------------------|
| 24x24x6' Hendey. | 60x60x17' Batts, 2 heads. |
| 24x24x6' Pease. | 60x60x20' Sellers, 4 heads. |
| 44x44x12' Pond, 4 heads. | 66x66x20' New Haven, 2 heads. |
| 48x48x16' Bement-Miles, 2 heads. | 84x84x32' Putnam, 4 heads. |
| 54x54x16' Sellers, 4 heads. | |

PRESSES

- | | |
|---|---|
| No. 856 Toledo, 35" stroke, 15,000 lbs. | No. 3 Robinson, 4300 lbs., o. b. i. |
| Perkins, dbl. crank, 16x24 bolster. | No. 6-A Willard 3400 lbs. inclinable. |
| No. 35 Niagara, Stiles type, (2). | No. 1 1/2 Robinson 1500 lbs. inc., (3). |

DRILLS and RADIALS

- | | |
|--------------------------------------|--------------------------------------|
| Henry & Wright sgl. spdl., high spd. | 24", 26", 28" and 32", sliding head. |
| 2 1/2" Canedy-Otto plain, new. | 3' Morris plain, gear box drive. |
| Sensitive 1, 2, 3, 4 and 6 spindle. | 4 1/2' Prentice, gear box drive. |

Six new standard makes 20" Drills, each \$123.50

MILLING MACHINES

- | | |
|-----------------------------------|--|
| No. 25 Becker plain, (3). | No. 1 1/2 B. & S. plain. |
| Ames Lincoln type, 10"x40" table. | No. 2 H Brown & Sharpe plain. |
| No. 2 Kempsmith universal. | Briggs type "A" high duty, 24x9 table. |
| No. 3 Brainard, 30x7 table. | No. 32 Kempsmith Lincoln type, (3). |

GRINDERS

- | | |
|-------------------------------------|--------------------------|
| Nos. 1 & 78 W. & M. surface. | Landis 10x24 universal. |
| 10x24 Norton plain. | Litter 10x20 universal. |
| Capital, internal, practically new. | 36" and 66" Yates plate. |

MISCELLANEOUS

- | | |
|--------------------------------------|---|
| Band saws, metal, Klemm, (2). | Motors, 1 to 50 h.p., 3 ph., 220 v., G.E. |
| Boring mill, 12", 2 swivel heads. | Oil groover, Garvin, nearly new. |
| Brake, 8' Keene, for 16 gauge. | Oil separator, Springfield. |
| Compressors, 9x8 and 12x10, new. | Pipe machines, 2", 4", 6" & 12". |
| Gear cutter, G. & E. 36". | Pumps, Gould triplex, 6"x8" & 7"x8". |
| Gear cutter, Whiton 35"x9 1/2" face. | Punch & shears, 4 thru 12" throat. |
| Hammers, 40 lb. Bradley, helve, (2). | Riveter, high speed, 3" capacity. |
| Hammer, Toledo, 3,000 lb. fric. brd. | Shear, 5' Robinson, for 10 gauge. |
| Hammer, Canton 4,000 lb. b.g. drop. | Shear, 8' Robinson, for 16 gauge. |

Osborne & Sexton Machinery Co.

Columbus, Ohio

Dayton Office: 1118 Lindsey Building, Phone Main 1524

Harris Brothers Co.

1475 W. 35th St., Chicago, Ill.

Turret Lathes and Screw Machines

24" Gisholt with 4 way turret tool post on carriage, hex turret, on bed, with power rapid traverse, taper attachment, screw cutting 2 step cone, triple geared, 6 $\frac{1}{2}$ " hole in spindle (10).

24" Steinle; Same (1).

28" Pond Rigid; same (2).

Grinders

12"x36" Fitchburg plain, (3).

Fitchburg, Low-Swing Lathe, 8" swing, 96" centers, (3).

10x50 Norton plain.

18" Gisholt, 6 $\frac{1}{2}$ " hole, screw cut'g (2).
Pratt & Whitney No. 1, hand screw mche., 7/16" auto. chuck cap. (6).
Gridley 34" single spindle auto. (16).
18"x8" Milwaukee, tur. on carr. (6).
12"x8" Symington 4" hole in spindle set. over turrets, (10).
16"x6" Windsor b. g. fric. head.

Ventilating Blowers

American Blower Co., (Sirroco Type) 5'2"x7'4", upper casing 4'x8".
Double Inlet 36". Upper Cone shaped quadruple Outlet 36". Capacity 25,000 cu. ft. per min. (12).

Hammer and Punch Presses

No. 55 D. G. G. Ferracute, sided, single action, 16" stroke. Weight about 16,000 lbs. 70 tons pressure.

No. 56 D. G. G. Ferracute, St. Sided, single action, 16" stroke. Weight about 22,000 lbs. 100 tons pressure.

No. 201, Ferracute, St. Sided 10" str. Weight about 44,000 lbs. 200 tons pressure.

Erie 800 lbs. single frame, (2).

No. E-57 Ferracutes, 1500 tons pressure, 24" stroke. Weight about 130,000 lbs.

Erie 1,500 lbs. single frame.

1000 lb. Lennox, friction board drop.

1250 lb. Massillon, steam drop.

30" Q. C. sgl. end cap. 4"x11".

Wiener T40 shear for 15"x1" Beams, 4"x4" angle, wt. 20,000 lbs.

Drill Presses and Boring Machines

8-spd. Baush, univ. adjustable 20" circular head, capacity 1".

Foots-Burt 2 spd. adjustable vert.

Planers, Shapers and Slotters

12" Putnam rotary table slotter.

48x48x16 Pond planer, 4 heads.

18" Flather, crank.

18" Betts rotary table slotter.

18" & 20" Niles rotary table slotters.

Milling Machines

24"x24"x12" Ingersoll horizontal slab milling machines (6) new.

No. 4 Hendey Lincoln milling machines (250).

No. 7 H. Becker Lincoln milling machines (250).

No. 6 Whitney hand (10).

No. 22 Garvin, vertical.

No. 5 Becker, vertical.

No. 3 Brown & Sharpe, vertical.

No. 2 Brown & Sharpe, plain.

No. 3 Brown & Sharpe, universal.

No. 3 Pedrick & Ayer, universal.

Miscellaneous

Bending roll, 6' New Doty, capacity 1" plate.

Bolt cutter, 1" Acme, 4-spindle.

Boring and turning mill, 60" Colburn, vertical.

Centering machine, 9" Whiton.

Cutting-off machines, for 2 $\frac{1}{2}$ ", 3", 4" & 6" pipe and shafting.

Motors, 8 Westinghouse, 250 h. p.,

440 volt, 60 cycle, 3 phase, speed 514 r. p. m., Type C.C.L. squirrel cage, with base, with starters.

Nut facing machines.

Nut tapper, Acme 4-spd. 1 $\frac{1}{2}$ " vert.

Pipe threaders, Curtis 2 $\frac{1}{2}$ " 4 & 6.

Write for Industrial Bulletin No. 204

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CLEVELAND

DETROIT

CINCINNATI

PITTSBURGH

Classified Finding Index

Air Guns

Powell Co., Wm., Cincinnati

Angle Plates

Germansow-Simon Mch Wks., Rochester N.Y.

Arbors, Solid

Nicholson & Co., W. H., Wilkes-Barre, Pa.
E. O. Partridge 2047 W. Lake St., Chicago

Automatics

National Acme Company, Cleveland
New Britain Machine Co., New Britain, Conn.

Balancing Ways

Anderson Bros. Mfg. Co., Rockford, Ill.

Ball Bearings

Abbott Ball Co., Hartford, Conn.
William Co., The 23 Flatbush Ave., Brooklyn, N.Y.

Balls, Brass, Bronze and Steel

Abbott Ball Co., Hartford, Conn.
William Co., The 23 Flatbush Ave., Brooklyn, N.Y.

Band Saw Machines, for Metal

Armstrong-Bloom Mfg. Co., 341 N. Francisco Ave., Chicago

Barrels, Tumbling

Abbott Ball Co., Hartford, Conn.
Scully-Jones & Co., Ry. Exch. Bldg., Chicago

Belt Shifter

Kremer-Cummings Machine Co., Cleveland

Bench Legs, Steel

New Britain Mch. Co., New Britain, Conn.

Bending Machines, Hand and Power

Armstrong-Bloom Mfg. Co., 341 N. Francisco Ave., Chicago
Hendley & Whittemore Co., Beloit, Wis.
Lewthwaite Co., Geo. A., 118 Walker St., N.Y.
Lewthwaite Mch. Co., T. H. 417 E. 31st, N.Y.
Lourie Mfg. Co., Springfield, Ill.
Fedrick Tool & Machine Co., Philadelphia
Underwood Corp., H. B., Philadelphia

Boring Bars

Madison Mfg. Co., Muskegon, Mich.
Fedrick Tool & Machine Co., Philadelphia
Scully Tool Co., Bridgeport, Conn.
Underwood Corp., H. B., Philadelphia

Boring Bars, Cylinder

Fedrick Tool & Machine Co., Philadelphia
Underwood Corp., H. B., Philadelphia

Boring, Drilling and Milling Machines, Horizontal

Barnes Co., W. F. & John, Rockford, Ill.
Beaman & Smith Co., Providence, R. I.
Carroll Fdry. & Mch. Tool Co., Bucyrus, Ohio
Fawling & Harnischfeger Co., Milwaukee
Simmons Machine Co., Albany, N.Y.

Boring Machines, Horizontal

Ayer Drilling Machine Co., Cincinnati
Fedrick Tool & Machine Co., Philadelphia

Boring and Turning Machines, Vertical

Simmons Machine Co., Albany, N.Y.
Turner Machine Co., Danbury, Conn.

Bowden Wire Mechanism

Gwilliam Co., The 23 Flatbush Ave., Brooklyn, N.Y.

Brushes

Velco Mfg. Co., Inc., Greenfield, Mass.

Broaching Machines

Simmons Machine Co., Albany, N.Y.

Bushings, Brass and Bronze

Bundling Brass & Bronze Co., Toledo, Ohio

Case Hardening Compound

Buchanan Chemical Co., C. G., Cincinnati

Casters for Trucks

Hamilton Caster & Mfg. Co., Hamilton, Ohio

Centers, Index

Brown & Sharpe Mfg. Co., Providence, R. I.
Carter & Hakes Mch. Co., W. Winsted, Conn.

Chains, Power Transmission

Collman Wheel Co., 1344 Altgeld St., Chicago
Whitney Mfg. Co., Hartford, Conn.

Chasers

Modern Tool Co., Erie, Pa.
National Acme Co., Cleveland

Chucking Machines

New Britain Mch. Co., New Britain, Conn.

Chucks, Air

Frontier Chuck & Tool Co., Buffalo, N.Y.

Chucks, Centering

McCroskey Tool Corporation, Meadville, Pa.

Chucks, Draw-in and Thrust

Hardinge Bros., 1770 Bertau Av., Chicago

Chucks, Drill

Collis Company, The, Clinton, Iowa
Hartford Special Mch. Co., Hartford, Conn.
Jacobs Mfg. Co., Hartford, Conn.
McCroskey Tool Corporation, Meadville, Pa.
Modern Tool Co., Erie, Pa.
Scully-Jones & Co., Ry. Exch. Bldg., Chicago
Weaver Mfg. Co., Springfield, Ill.

Chucks, Drill and Tap

Collis Company, The, Clinton, Iowa
McCroskey Tool Corporation, Meadville, Pa.
Modern Tool Co., Erie, Pa.
Foster Bros. Mfg. Co., Alton, Ill.
Scully-Jones & Co., Ry. Exch. Bldg., Chicago

Chucks, Keyway Cutting

Scully-Jones & Co., Ry. Exch. Bldg., Chicago

Classified Finding Index

Chucks, Magnetic
Hosold Machine Co., Worcester, Mass.

Clutches, Friction
Edgemont Machine Co., Dayton, Ohio
Milwaukee Shaper Co., Milwaukee, Wis.

Cold Saws
Burke Machine Tool Co., Connecticut, Ohio
Cochrane-Bly Co., Rochester, N. Y.
Knowlton Machine Co., Westbrook, Me.
Peter Bros. Mfg. Co., Algonquin, Ill.

Collets, Lathes and Screw Machine
Rath & Co., Inc., John, Worcester, Mass.
Hardinge Bros., 1770 Berteau Av., Chicago
Martinson Machine Products, Inc.,
Rochester, N. Y.

Couplings, Flexible
Cooper Flexible Transmission Co., Inc.,
Brooklyn

Cranes, Hand Power
Euclid Crane & Hoist Co., Euclid, Ohio
Northern Engineering Works, Detroit, Mich.
Fawling & Harnischfeger Co., Milwaukee, Wis.
Weaver Mfg. Co., Springfield, Ill.

Cranes, Portable
Canedy-Otto Mfg. Co., Chicago Heights, Ill.
Canton Foundry & Mch. Co., Canton, Ohio
Weaver Mfg. Co., Springfield, Ill.

Cranes, Traveling
Euclid Crane & Hoist Co., Euclid, Ohio
Northern Engineering Works, Detroit, Mich.
Fawling & Harnischfeger Co., Milwaukee, Wis.

Crank Pin Turning Machine
Pedrick Tool & Machine Co., Philadelphia
Underwood Corp., H. B., Philadelphia

Cutters, Adjustable
McCroskey Tool Corporation, Meadville, Pa.
Madison Mfg. Co., Muskegon, Mich.

Cutters, Belt
Lewthwaite Co., Geo. A., 116 Walker St., N. Y.

Cutters, Keyseating
Elco Tool Corporation, Rockford, Ill.
Neully-Jones & Co., Ry. Exch. Bldg., Chicago
Whitney Mfg. Co., Hartford, Conn.

Cutters, Milling
Brown & Sharpe Mfg. Co., Providence, R. I.
Clough, R. M., Meriden, Conn.
Elco Tool Corporation, Rockford, Ill.
Mebach Tool & Machine Co., Boston
Whitney Mfg. Co., Hartford, Conn.

Cutting-Off Machines
Davis Machine Tool Co., Rochester, N. Y.
Etna Mfg. Co., Toledo, Ohio
Peter Bros. Mfg. Co., Algonquin, Ill.

Cylinder Boring Machines, Portable
Pedrick Tool & Machine Co., Philadelphia
Underwood Corp., H. B., Philadelphia

Cylinder or Dome Facing Machines
Underwood Corp., H. B., Philadelphia

Die Heads, Self-Opening
Modern Tool Co., Erie, Pa.
Murchey Machine & Tool Co., Detroit, Mich.
National Acme Company, Cleveland

Dicing Machines
Henry & Wright Mfg. Co., Hartford, Conn.

Dies, Pipe Threading
Hignall & Keeler Mch. Wks., Edwardsville, Ill.

Dies, Screw and Thread Cutting
Greenfield Tap & Die Corp., Greenfield, Mass.
Hardinge Brothers, 1770 Berteau Av., Chicago
National Acme Company, Cleveland

Dies, Self-Opening Adjustable
Greenfield Tap & Die Corp., Greenfield, Mass.
Modern Tool Co., Erie, Pa.
Murchey Mch. & Tool Co., Detroit, Mich.
Rickett-Shafer Co., Erie, Pa.
Victor Tool Co., Inc., Waynesboro, Pa.

Dogs, Machine
Ready Tool Co., Bridgeport, Conn.

Drilling Machine Heads
Nelson-Blanch Mfg. Co., Detroit, Mich.
United States Drill Head Co., Cincinnati
United States Machine Tool Co., Cincinnati

Drilling Machines, Bench
Avey Drilling Machine Co., Cincinnati
Barnes Co., W. F. & John, Rockford, Ill.
Burke Machine Tool Co., Connecticut, Ohio
Canedy-Otto Mfg. Co., Chicago Heights, Ill.
High Speed Hammer Co., Rochester, N. Y.
Reed Co., Francis, Worcester, Mass.
Taylor & Fenn Co., Hartford, Conn.

Drilling Machines, Horizontal
Fawling & Harnischfeger Co., Milwaukee, Wis.

Drilling Machines, Multiple Spindle
Avey Drilling Machine Co., Cincinnati
Detroit Machine Tool Co., Detroit, Mich.
Henry & Wright Mfg. Co., Hartford, Conn.
National Acme Company, Cleveland
Reed Co., Francis, Worcester, Mass.
Sipp Machine Co., Paterson, N. J.
Taylor & Fenn Co., Hartford, Conn.

Drilling Machines, Post
Canedy-Otto Mfg. Co., Chicago Heights, Ill.
Henry & Wright Mfg. Co., Hartford, Conn.
Mueller Machine Tool Co., Cincinnati

Drilling Machines, Radial
Canedy-Otto Mfg. Co., Chicago Heights, Ill.
Henry & Wright Mfg. Co., Hartford, Conn.
Mueller Machine Tool Co., Cincinnati
Fawling & Harnischfeger Co., Milwaukee, Wis.
Taylor & Fenn Co., Hartford, Conn.
Sipp Machine Co., Paterson, N. J.

Drilling Machines, Sensitive
Avey Drilling Machine Co., Cincinnati
Burke Machine Tool Co., Connecticut, Ohio
Canedy-Otto Mfg. Co., Chicago Heights, Ill.
Hardinge Brothers, 1770 Berteau Av., Chicago
Henry & Wright Mfg. Co., Hartford, Conn.
Reed Co., Francis, Worcester, Mass.
Sipp Machine Co., Paterson, N. J.
Taylor & Fenn Co., Hartford, Conn.
United States Machine Tool Co., Cincinnati
Wisconsin Electric Co., Racine, Wis.

Classified Finding Index

Drilling, Milling and Boring Machines, Vertical
Aurora Tool Works, Aurora, Ind.
Knight Machinery Co., W. B., St. Louis, Mo.

Drilling Machines, Vertical
Aurora Tool Works, Aurora, Ind.
Avey Drilling Machine Co., Cincinnati
Barnes Co., W. F. & John, Rockford, Ill.
Canedy-Otto Mfg. Co., Chicago Heights, Ill.
Davis Machine Tool Co., Rochester, N. Y.
Frontier Mch. Tool Co., Inc., Buffalo, N. Y.
Henry & Wright Mfg. Co., Hartford, Conn.
Hinckley Machine Works, Hinckley, Ill.
Minster Machine Co., Minster, Ohio
Sipp Machine Co., Paterson, N. J.
Taylor & Fenn Co., Hartford, Conn.

Drilling and Tapping Attachments
Aurora Tool Works, Aurora, Ind.
Henry & Wright Mfg. Co., Hartford, Conn.
McCroskey Tool Corporation, Meadville, Pa.
Modern Tool Co., Erie, Pa.
Reed Co., Francis, Worcester, Mass.
Sipp Machine Co., Paterson, N. J.
Turner Machine Co., Danbury, Conn.

Drills, Center
Cogswill Manufacturing Co., Detroit

Drills, Portable Electric
Wisconsin Electric Co., Racine, Wis.
Wodack Electric Tool Corporation, 25 S. Jefferson St., Chicago

Drills, Portable Pneumatic
Keller Pneumatic Tool Co., Grand Haven, Mich.

Dust Handling Equipment
Knickerbocker Co., Jackson, Mich.

Emery Stands
Blount Co., J. G., Everett, Mass.
Marchke Mfg. Co., Inc., Indianapolis, Ind.
Partridge, E. O., 2047 W. Lake St., Chicago

Emery Wheel Dressers and Cutters
Precision Truing Mch. & Tool Co., Cinti.
Taylor & Fenn Co., Hartford, Conn.

Facing Heads, Automatic
Mummert-Dixon Co., Hanover, Pa.

Feeders, Oil and Soda Water
New Britain Machine Co., New Britain, Conn.

Filing Machines
Cochrane-Bly Co., Rochester, N. Y.

Flexible Shafts
Strand & Co., N. A., 649 Washington Blvd., Chicago

Forges
Canedy-Otto Mfg. Co., Chicago Heights, Ill.

Forgings, Drop
Western Tool & Mfg. Co., Springfield, Ohio

Forgings, Hollow Bored
American Hollow Boring Co., Erie, Pa.

Furnaces
Bennett Co., W. R., Elmwood Conn.
Strong, Carlisle & Hammond Co., Cleveland

Furniture, Machine Shop
New Britain Machine Co., New Britain, Conn.
Western Tool & Mfg. Co., Springfield, Ohio

Gauges, Taper
Hartford Special Mch. Co., Hartford, Conn.
Way Co., A. F., Hartford, Conn.

Gauges, Thread
Bath & Co., Inc., John, Worcester, Mass.

Gear Cutting Machines
Brown & Sharpe Mfg. Co., Providence, R. I.

Gears
Merkle-Korff Gear Co., 313 S. Clinton St., Chicago
Stranahan Gear Co., Inc., Philadelphia

Grinding Machines, Bench
Blount Co., J. G., Everett, Mass.
Partridge, E. O., 2047 W. Lake St., Chicago

Grinding Machines, Cutter, Reamer and Tool
Barnes Co., W. F. & John, Rockford, Ill.
Blount Co., J. G., Everett, Mass.
Clough, R. M., Meriden, Conn.
Grand Rapids Grinding Machine Co., Grand Rapids, Mich.

Greenfield Machine Co., Greenfield, Mass.
Greenfield Tap & Die Corp., Greenfield, Mass.
Manhattan Machine & Tool Works, Grand Rapids, Mich.
Marchke Mfg. Co., Inc., Indianapolis, Ind.
Modern Tool Co., Erie, Pa.
Mummert-Dixon Co., Hanover, Pa.
National Acme Co., Cleveland
Simmons Machine Co., Albany, N. Y.
Thompson Grinder Co., Springfield, Ohio
Wilmarth & Norman Co., Grand Rapids, Mich.

Grinding Machines, Cylinder
Heald Machine Co., Worcester, Mass.
Whitney & Son, Baxter D., Winchendon, Mass.

Grinding Machines, Cylindrical
Brown & Sharpe Mfg. Co., Providence, R. I.
Detroit Machine Tool Co., Detroit, Mich.
Greenfield Machine Co., Greenfield, Mass.
Manhattan Machine & Tool Works, Grand Rapids, Mich.

Modern Tool Co., Erie, Pa.
Ott Grinder Co., Indianapolis, Ind.
Schmidt Co., B. L., Davenport, Iowa
Simmons Machine Co., Albany, N. Y.
Thompson Grinder Co., Springfield, Ohio

Grinding Machines, Die
Manhattan Machine & Tool Works, Grand Rapids, Mich.
Modern Tool Co., Erie, Pa.
Thompson Grinder Co., Springfield, Ohio
Wilmarth & Norman Co., Grand Rapids, Mich.

Grinding Machines, Drill
Grand Rapids Grinding Machine Co., Grand Rapids, Mich.
Wilmarth & Norman Co., Grand Rapids, Mich.

Grinding Machines, Face
Marchke Mfg. Co., Inc., Indianapolis, Ind.
Taylor & Fenn Co., Hartford, Conn.
Thompson Grinder Co., Springfield, Ohio

Grinding Machines, Internal
Heald Machine Co., Worcester, Mass.
Modern Tool Co., Erie, Pa.
Ott Grinder Co., Indianapolis, Ind.
Taylor & Fenn Co., Hartford, Conn.
Thompson Grinder Co., Springfield, Ohio
Whitney & Son, Baxter D., Winchendon, Mass.
Wilmarth & Norman Co., Grand Rapids, Mich.

Grinding Machines, Oilstone
Mummert-Dixon Co., Hanover, Pa.

Grinding Machines, Portable
Marchke Mfg. Co., Inc., Indianapolis, Ind.
Mummert-Dixon Co., Hanover, Pa.
Strand & Co., N. A., 649 Washington Blvd., Chicago
Wisconsin Electric Co., Racine, Wis.
Wodack Electric Tool Corporation, 25 S. Jefferson St., Chicago

Classified Finding Index

Grinding Machines, Snagging

Grand Rapids Grinding Machine Co., Grand Rapids, Mich.
Manhattan Machine & Tool Works, Grand Rapids, Mich.
Marschke Mfg. Co., Inc., Indianapolis, Ind.

Grinding Machines, Surface

Heald Machine Co., Worcester, Mass.
Thompson Grinder Co., Springfield, Ohio
Wilmuth & Morgan Co., Grand Rapids, Mich.

Grinding Machines, Tap

Grand Rapids Grinding Machine Co., Grand Rapids, Mich.

Grinding Machines, Universal

Brown & Sharpe Mfg. Co., Providence, R. I.
Grand Rapids Grinding Machine Co., Grand Rapids, Mich.
Greenfield Machine Co., Greenfield, Mass.
Greenfield Tap & Die Corp., Greenfield, Mass.
Modern Tool Co., Erie, Pa.
Ott Grinder Co., Indianapolis, Ind.
Simmons Machine Co., Albany, N. Y.
Thompson Grinder Co., Springfield, Ohio
Wilmuth & Morgan Co., Grand Rapids, Mich.

Grinding Wheel Dressers

Miller & Sons, Otto A., Detroit, Mich.

Hack Saw Machines

Armstrong-Blum Mfg. Co., 341 N. Francisco Av., Chicago
Western Tool & Mfg. Co., Springfield, Ohio

Hammers, Belt & Motor Driven

Beaudry & Co., Boston
United Hammer Co., Boston

Hammers, Electric

Wodack Electric Tool Corporation, 25 S. Jefferson St., Chicago

Hammers, Power

Beaudry & Co., Boston
Nazel Engineering & Mch. Wks., Philadelphia
United Hammer Co., Boston

Hammers, Riveting

High Speed Hammer Co., Rochester, N. Y.
Quickwork Co., St. Marys, Ohio

Heads, Dividing

Simmons Machine Co., Albany, N. Y.
Willard-Middletown Machine Co., Cincinnati

Heads, Index

Dickow, Fred C., 3564 W. Lake St., Chgo.

Hoists, Air

Northern Engineering Works, Detroit, Mich.

Hoists, Electric

Euclid Crane & Hoist Co., Euclid, Ohio
Northern Engineering Works, Detroit, Mich.
Weaver Mfg. Co., Springfield, Ill.

Hoists, Electric Traveling

Euclid Crane & Hoist Co., Euclid, Ohio
Northern Engineering Works, Detroit, Mich.
Fawling & Harnischfeger Co., Milwaukee, Wis.

Hoists, Portable

Canton Foundry & Machine Co., Canton, Ohio

Holders and Counterbars

Manufacturers Machine Products Co., Detroit, Mich.

Jigs, Fixtures, Tools, Etc.

Hartford Special Mch. Co., Hartford, Conn.
Hinckley Machine Works, Hinckley, Ill.
Potter Tool & Machine Works, S. A., 79 E. 120th St., New York
Way Co., A. F., Hartford, Conn.

Joints, Universal

Borgeson Manufacturing Co., Inc., Torrington, Conn.
Cooper Flexible Transmission Co., Inc., Brooklyn

Keyseating Machines

Bucher-Smith Co., East Liverpool, Ohio
Chattanooga Mch. Co., Chattanooga, Tenn.
Davis Machine Tool Co., Rochester, N. Y.
National Machine Tool Co., Cincinnati
Whitney Mfg. Co., Hartford, Conn.

Lathe Accessories and Attachments

Hardinge Bros., 1770 Bertau Ave., Chicago
McCroskey Tool Corporation, Meadville, Pa.
Modern Tool Co., Erie, Pa.
Sidney Tool Co., Sidney, Ohio
Simmons Machine Co., Albany, N. Y.

Lathes, Automatic

National Acme Company, Cleveland

Lathes, Bench

Blount Co., J. G., Everett, Mass.
Hardinge Brothers, 1770 Bertau Ave., Chicago
Potter Tool & Machine Works, S. A., 79 E. 120th St., New York

Lathes, Engine

Barnes Co., W. F. & John, Rockford, Ill.
Candy-Otto Mfg. Co., Chicago Heights, Ill.
Davis Machine Tool Co., Rochester, N. Y.
Hardinge Bros., 1770 Bertau Ave., Chicago
Lehmann Machine Co., St. Louis, Mo.
Monarch Machine Tool Co., Sidney, Ohio
Mueller Machine Tool Co., Cincinnati
Sidney Tool Co., Sidney, Ohio
Standard Lathe Works, Cincinnati
Willard Machine Tool Co., Cincinnati

Lathes, Foot Power

Barnes Co., W. F. & John, Rockford, Ill.

Lathes, Horizontal Turret

Davis Machine Tool Co., Rochester, N. Y.
Steinle Turret Machine Co., Madison, Wis.

Lathes, Short Cut

Sidney Tool Co., Sidney, Ohio

Lathes, Speed and Hand

Blount Co., J. G., Everett, Mass.
Greenfield Tap & Die Corp., Greenfield, Mass.

Lockers, Shelving and Cupboards, Steel

Terrell's Equipment Co., Grand Rapids, Mich.

Mandrels, Expanding

Bath & Co., Inc., John, Worcester, Mass.
Nicholson & Co., W. H., Wilkes-Barre, Pa.
Western Tool & Mfg. Co., Springfield, Ohio

Mandrels, Solid

Nicholson & Co., W. H., Wilkes-Barre, Pa.

Measuring Devices

Van Keuren Co., The, Boston

Metal Cutting Machines, Sheet

Quickwork Co., St. Marys, Ohio
Savage Co., W. J., Knoxville, Tenn.
Way Co., A. F., Hartford, Conn.

Micrometers, Internal

Bath & Co., Inc., John, Worcester, Mass.

Milling Attachments

Brown & Sharpe Mfg. Co., Providence, R. I.
Burke Machine Tool Co., Connecticut, Ohio
Hinckley Machine Works, Hinckley, Ill.
Knight Machinery Co., W. H., St. Louis, Mo.
Potter Tool & Machine Works, S. A., 79 E. 120th St., New York
Willard-Middletown Machine Co., Cincinnati

Classified Finding Index

Milling Machines, Bench

Burke Machine Tool Co., Connecticut, Ohio
Carter & Hakes Mch. Co., W. Winsted, Conn.
Hardinge Bros., 1770 Berteau Ave., Chicago
Simmons Machine Co., Albany, N. Y.

Milling Machines, Hand

Burke Machine Tool Co., Connecticut, Ohio
Carter & Hakes Mch. Co., W. Winsted, Conn.
Hardinge Bros., 1770 Berteau Ave., Chicago
United States Machine Tool Co., Cincinnati
Whitney Mfg. Co., Hartford, Conn.

Milling Machines, Horizontal

Beaman & Smith Co., Providence, R. I.

Milling Machines, Plain

American Milling Machine Co., Cincinnati
Beaman & Smith Co., Providence, R. I.
Brown & Sharpe Mfg. Co., Providence, R. I.
Burke Machine Tool Co., Connecticut, Ohio
Cochrane-Bly Co., Rochester, N. Y.
Hardinge Bros., 1770 Berteau Ave., Chicago

Milling Machines, Portable

Fedrick Tool & Machine Co., Philadelphia
Underwood Corp., H. B., Philadelphia

Milling Machines, Universal

American Milling Machine Co., Cincinnati
Brown & Sharpe Mfg. Co., Providence, R. I.
Cochrane-Bly Co., Rochester, N. Y.

Milling Machines, Vertical

Beaman & Smith Co., Providence, R. I.
Brown & Sharpe Mfg. Co., Providence, R. I.
Burke Machine Tool Co., Connecticut, Ohio
Clough, R. M., Meriden, Conn.
Cochrane-Bly Co., Rochester, N. Y.
Hardinge Bros., 1770 Berteau Ave., Chicago
Knight Machinery Co., W. B., St. Louis, Mo.
Taylor & Fenn Co., Hartford, Conn.

Motors, Electric

Reliance Electric & Eng. Co., Cleveland
Wisconsin Electric Co., Racine, Wis.

Nut Facing Machines

Victor Tool Co., Inc., Waynesboro, Pa.

Oil Cups

Gits Bros. Mfg. Co., 1940 S. Kilbourn Ave., Chicago
Tucker, W. C. & F. C., Hartford, Conn.

Oil Extractors

Cartis, Albert B., Eatate, Worcester, Mass.

Oil Hole Covers

Tucker, W. C. & F. C., Hartford, Conn.

Pattern Shop Machinery

Cochrane-Bly Co., Rochester, N. Y.
Towley Mfg. Co., John T., Cincinnati

Pipe Bending Machines

Fedrick Tool & Machine Co., Philadelphia
Underwood Corp., H. B., Philadelphia

Pipe Cutting and Threading Machines

Signal & Keeler Mch. Wks., Edwardsville, Ill.
Simmons Machine Co., Albany, N. Y.

Piston and Piston Ring Machines

National Acme Company, Cleveland.

Planer Attachment, Radius

Underwood Corp., H. B., Philadelphia

Planer Attachment, Slotting

Moore Co., H. A., Rochester, N. Y.

Planer Tools, Circular

Underwood Corp., H. B., Philadelphia

Planers, Valve Seat, Portable

Fedrick Tool & Machine Co., Philadelphia
Underwood Corp., H. B., Philadelphia

Pneumatic Tools

Keller Pneumatic Tool Co., Grand Haven, Mich.

Polishing and Buffing Machines

Blount Co., J. G., Everett, Mass.
Canedy-Otto Mfg. Co., Chicago Heights, Ill.
New Britain Machine Co., New Britain, Conn.
Partridge, E. O., 2047 W. Lake St., Chicago
Wilmarth & Merman Co., Grand Rapids
Wisconsin Electric Co., Racine, Wis. (Mich.)

Presses, Arbor

Atlas Press Co., Kalamazoo, Mich.
Bartlett, Edwin E., Nashua, N. H.
Canedy-Otto Mfg. Co., Chicago Heights, Ill.
Laurie Mfg. Co., Springfield, Ill.
Nicholson & Co., W. H., Wilkes-Barre, Pa.
Weaver Mfg. Co., Springfield, Ill.

Presses, Bracing

Atlas Press Co., Kalamazoo, Mich.
Bartlett, Edwin E., Nashua, N. H.
Laurie Mfg. Co., Springfield, Ill.

Presses, Foot

Atlas Press Co., Kalamazoo, Mich.
Lewthwaite Co., Geo. A., 116 Walker St., N. Y.
Laurie Mfg. Co., Springfield, Ill.
Rockford Iron Works, Rockford, Ill.
Taylor & Fenn Co., Hartford, Conn.
Partridge, E. O., 2047 W. Lake St., Chicago

Presses, Power

Hendley & Whittmore Co., Detroit, Wis.
Loshbough-Jordan T. & M. Co., Elkhart, Ind.
Rockford Iron Works, Rockford, Ill.
Willard-Middletown Machine Co., Cincinnati

Presses, Punch

Henry & Wright Mfg. Co., Hartford, Conn.
Lewthwaite Co., Geo. A., 116 Walker St., N. Y.
Lewthwaite Mch. Co., T. H., 417 E. 31st St., N. Y.
Loshbough-Jordan T. & M. Co., Elkhart, Ind.
Laurie Mfg. Co., Springfield, Ill.
Partridge, E. O., 2047 W. Lake St., Chicago
Rockford Iron Works, Rockford, Ill.

Presses, Screw

Atlas Press Co., Kalamazoo, Mich.
Laurie Mfg. Co., Springfield, Ill.
Manhattan Machine & Tool Works, Grand Rapids, Mich.
Towley Mfg. Co., John T., Cincinnati
Weaver Mfg. Co., Springfield, Ill.

Pulley Machinery

Avey Drilling Machine Co., Cincinnati

Pumps, Lubricating

Michigan Machine Co., Detroit, Mich.

Punch Press Feeds

Rockford Iron Works, Rockford, Ill.

Punch, Shear and Bender, Hand

Armstrong-Bium Mfg. Co., 341 N. Francisco Ave., Chicago

Punches, Hand

Armstrong-Bium Mfg. Co., 341 N. Francisco Ave., Chicago
Hendley & Whittmore Co., Detroit, Wis.
Lewthwaite Mch. Co., T. H., 417 E. 31st St., New York
Whitney Metal Tool Co., Rockford, Ill.

Classified Finding Index

Punches, Power

Clough, R. M., Meriden, Conn.
Hendley & Whittmore Co., Beloit, Wis.
Lewthwaite Co., Geo. A., 116 Walker St., N. Y.

Punches and Dies

Hendley & Whittmore Co., Beloit, Wis.
Lewthwaite Co., Geo. A., 116 Walker St., N. Y.
Lewthwaite Mch. Co., T. H., 417 E. 31st St.,
Rockford Iron Works, Rockford, Ill. (N. Y.)

Racks, Bar Stock

New Britain Machine Co., New Britain, Conn.

Reamer Holder, Floating

Victor Tool Co., Inc., Waynesboro, Pa.

Reamers, Adjustable

Clough, R. M., Meriden, Conn.
Greenfield Tap & Die Corp., Greenfield, Mass.
McCroskey Tool Corporation, Meadville, Pa.

Reamers, Cylinder

Himckley Machine Works, Hinchley, Ill.
McCroskey Tool Corporation, Meadville, Pa.

Reamers, Solid

Clough, R. M., Meriden, Conn.
Cogadill Manufacturing Co., Detroit
Elco Tool Corporation, Rockford, Ill.
McCroskey Tool Corporation, Meadville, Pa.
Ready Tool Co., Bridgeport, Conn.

Reels, Extension

Cincinnati Specialty Mfg. Co., Cincinnati

Riveting Machines

Grant Mfg. & Mch. Co., Bridgeport, Conn.
High Speed Hammer Co., Rochester, N. Y.

Rad Cutters

Armstrong-Blum Mfg. Co., 341 N. Francisco
Ave., Chicago
Hendley & Whittmore Co., Beloit, Wis.
Lewthwaite Co., Geo. A., 116 Walker St., N. Y.
Lewthwaite Mch. Co., T. H., 417 E. 31st St., N. Y.
Tucker, W. C. & F. C., Hartford, Conn.

Roller Bearings

William Co., The, 23 Flatbush Ave., Brooklyn,
New York

Saws, Slitting

Elco Tool Corporation, Rockford, Ill.

Scraping Machines, Pneumatic

Anderson Brothers Mfg. Co., Rockford, Ill.

Screw Driving Machines, Automatic

Reynolds Machine Co., Massillon, Ohio

Screw Machines, Automatic

Brown & Sharpe Mfg. Co., Providence, R. I.
National Acme Company, Cleveland
New Britain Mch. Co., New Britain, Conn.

Screw Machines, Auxiliary

National Acme Company, Cleveland

Screw Machines, Plain or Hand

Putter Tool & Machine Works, S. A.,
79 E. 120th St., New York

Screws, Cap and Set

National Acme Company, Cleveland

Second-Hand Machinery Dealers

Allen Machinery Co., B. C., 551 W. Monroe
St., Chicago
Bath & Co., Cyril J., Cleveland
Breen Machinery Co., St. Louis, Mo.
Brownell Machinery Co., Providence, R. I.

Second-Hand Mch. Dealers—Cont'd

Dale Machinery Co., Inc., 54 Washington
Rd., Chicago
Dickow Machinery Co., Fred C., 3508 West
Lake St., Chicago
Enterprise Machinery Co., 33 S. Clinton St.,
Chicago
Empire Machinery Exchange, Cleveland
Essley Machinery Co., S. L., 550 Washington
Bldg., Chicago
Federal Mch. Sales Co., 12 N. Jefferson St.,
Chicago
Fitzgerald & Co., W. H. J., Boston
Graves Mch. Ex., 50 Church St., New York
Harris Bros. Co., W. 35th & Iron, Chicago
Hill, Clarke & Co., 525 Wash'tn Bldg., Chicago
Johnson & Sons Machinery Co., Wm. C.,
St. Louis, Mo.

Jones Machine Tool Co., Cincinnati
Kemp Machinery Co., Baltimore, Md.
Little Co., W. P., Cleveland
Lucas & Son, Inc., J. L., Bridgeport, Conn.
Lynd-Farquhar Co., Boston, Mass.
McCabe Lathe & Machinery Corp., J. J.,
149 Broadway, New York
McDonald Machinery Co., St. Louis
McMullen Mch. Co., Grand Rapids, Mich.
Machine Tool Engineering Co., Inc., 95
Liberty St., New York
Marshall & Hueschert Machinery Co., 17 S.
Jefferson St., Chicago
Mott & Merryweather Mch. Co., Cleveland
New York Machinery Exchange, 50 Church
St., New York
Niles-Bement-Pond Co., 111 Broadway, N. Y.
Northern-Broadway Mch. Co., Cincinnati
O'Brien Machinery Co., Philadelphia
Osborne & Sexton Mch. Co., Columbus, O.
Oviatt & Co., D. C., Cleveland
Parker Co., Frank H., 1st National Bank
Bldg., Chicago

Peninsular Machinery Co., Detroit, Mich.
Frentiss & Co., Henry, Singer Bldg., N. Y.
Reliance Machinery Sales Co., Pittsburgh
Russell Machine Co., Pittsburgh, Pa.
Simmons Machine Co., Albany, N. Y.
Stocker-Rumely-Wach Co., 117 N. Jefferson
St., Chicago

Strong, Carlisle & Hammond Co., Chicago
Syracuse Supply Co., Syracuse, N. Y.
Toomey, Inc., Frank, Philadelphia
Vonnegut Machinery Co., Indianapolis, Ind.
Walsh Machinery Co., M. J., Milwaukee, Wis.
Wayne Mch. Co., Fort Wayne, Ind.
Winterer, Herman L., Philadelphia
White Mch. Co., A. D., 108 N. Jefferson
St., Chicago
Wright, David A., Jefferson & Monroe Bldg.,
Chicago

Shafts, Flexible

Stow Flexible Shaft Co., Philadelphia

Shafts, Steel

American Hollow Boring Co., Erie, Pa.

Shaper Attachment

Moore Co., H. A., Rochester, N. Y.

Shaping Machines

Chebrate-Bly Co., Rochester, N. Y.
Columbia Machine Tool Co., Hamilton, Ohio
Davis Machine Tool Co., Rochester, N. Y.
Milwaukee Shaper Co., Milwaukee, Wis.
Osborne & Sexton Mch. Co., Columbus, O.
Simmons Machine Co., Albany, N. Y.
Smith & Mills Co., Cincinnati
Streine Tool & Mfg. Co., New Bremen, Ohio

Shears, Hand

Armstrong-Blum Mfg. Co., 341 N. Francisco
Ave., Chicago
Hendley & Whittmore Co., Beloit, Wis.
Lewthwaite Co., Geo. A., 116 Walker St., N. Y.
T. H. Lewthwaite Machine Co., 417 E. 31st
St., New York
Tucker, W. C. & F. C., Hartford, Conn.
Whitney Metal Tool Co., Rockford, Ill.

Classified Finding Index

Shears, Power

Hendley & Whittemore Co., Beloit, Wis.
Quickwork Co., St. Marys, Ohio

Sine Bars

Way Co., A. F., Hartford, Conn.

Slotting Attachment for Planer and Shaper

Moore Co., H. A., Rochester, N. Y.

Slotting Machines

Clough, R. M., Meriden, Conn.

Sprockets

Collman Wheel Co., 1244 Altgeld St., Chicago

Steel, High Speed

Herbert, Ltd., Alfred, 50 Church St., New York

Steel, Tool

Herbert, Ltd., Alfred, 50 Church St., New York

Stock Supports

Way Co., A. F., Hartford, Conn.
Will-Burt Company, Orrville, Ohio

Straightening Machines

Towles Mfg. Co., John T., Cincinnati
Whitney Metal Tool Co., Rockford, Ill.

Swaging Machines

Etna Mfg. Co., Toledo, Ohio

Tables, Circular

Cochrane-Bly Co., Rochester, N. Y.
Hinckley Machine Works, Hinckley, Ill.
Leathwaite Co., Geo. A., 116 Walker St., N. Y.

Tap Extractors

Walton Co., Hartford, Conn.

Tapping Machines and Attachments

Avey Drilling Machine Co., Cincinnati
Bosman & Smith Co., Providence, R. I.
Hicknell-Thomas Co., Greenfield, Mass.
Burke Machine Tool Co., Greenfield, Ohio
Greenfield Tap & Die Corp., Greenfield, Mass.
McCroskey Tool Corporation, Meadville, Pa.
Modern Tool Co., Erie, Pa.
Bickert-Shafer Co., Erie, Pa.
Taylor-Shantz Co., Rochester, N. Y.
Turner Machine Co., Danbury, Conn.
Whitney Mfg. Co., Hartford, Conn.
Whitney Metal Tool Co., Rockford, Ill.
Workwell Eng. & Mfg. Co., 616 W. Monroe St., Chicago

Taps, Collapsing

Modern Tool Co., Erie, Pa.
Murchey Machine & Tool Co., Detroit, Mich.
Victor Tool Co., Inc., Waynesboro, Pa.

Taps and Dies

National Acme Company, Cleveland
Victor Tool Co., Inc., Waynesboro, Pa.

Thread Grinders

Bath & Co., Inc., John, Worcester, Mass.

Threading Machines, Bolt and Stud

National Acme Company, Cleveland

Threading Tools

Armstrong Bros. Tool Co., 308 N. Francisco Av., Chicago
Modern Tool Co., Erie, Pa.
Murchey Machine & Tool Co., Detroit, Mich.
National Acme Company, Cleveland
Ready Tool Co., Bridgeport, Conn.

Tool Holders

Armstrong Bros. Tool Co., 308 N. Francisco Av., Chicago
Cleveland National Mch. Co., Cleveland
Ready Tool Co., Bridgeport, Conn.
Western Tool & Mfg. Co., Springfield, Ohio

Tools, Boring

Armstrong Bros. Tool Co., 308 N. Francisco Av., Chicago
B. & W. Tool & Die Co., Cleveland

Tools, Lathe and Planer

Armstrong Bros. Tool Co., 308 N. Francisco Av., Chicago
Ready Tool Co., Bridgeport, Conn.

Tools, Machinists'

Armstrong Bros. Tool Co., 308 N. Francisco Av., Chicago
Brown & Sharpe Mfg. Co., Providence, R. I.

Trucks, Machine Shop

New Britain Machine Co., New Britain, Conn.
Towles Mfg. Co., John T., Cincinnati

Turntables

Canton Foundry & Machine Co., Canton, O.

Valves

Powell Co., Wm., Cincinnati

Valve Seat Planing Machines, Portable

Underwood Corp., H. B., Philadelphia

Vises, Drilling Machine

Armstrong-Bloom Mfg. Co., 341 N. Francisco Av., Chicago
Armstrong Bros. Tool Co., 308 N. Francisco Av., Chicago
Carter & Hakes Mch. Co., W. Winsted, Conn.
Germanow-Simon Mch. Wks., Rochester, N. Y.

Vises, Machinists'

Hollands Tool Co., Erie, Pa.
New Britain Machine Co., New Britain, Conn.
Western Tool & Mfg. Co., Springfield, Ohio

Vises, Milling Machine

Carter & Hakes Mch. Co., W. Winsted, Conn.
Cochrane-Bly Co., Rochester, N. Y.
Germanow-Simon Mch. Wks., Rochester, N. Y.
Hardinge Brothers, 1770 Bertau Av., Chicago
Hartford Special Mch. Co., Hartford, Conn.

Vises, Shaper

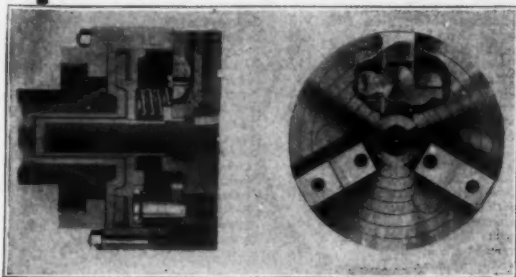
Columbia Machine Tool Co., Hamilton, Ohio

Wood Working Machinery

Hendley & Whittemore Co., Beloit, Wis.
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Pilot Bar Chuck

Made in 8"-10"-12"-15"-18" sizes of either Two or Three Jaw Manufacturing or Adjustable Types

The Frontier Pilot Bar Chuck is designed to meet the conditions where tools must be piloted. It is of the same simple construction as the other types of Frontier Chucks and is attached to the working end of the spindle. The Pilot Bushing is screwed into the face of the chuck which makes it absolutely rigid and concentric with the outside diameter at all times. The Pilot Tube will allow pilots of any desired length to be used. This chuck will bear your investigation. We also manufacture standard chucks without pilot bushings and drill press chucks.

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- The quick change chucks for small tools.
- Have automatic grip and release. Tools removed and inserted without slowing or stopping the machine.
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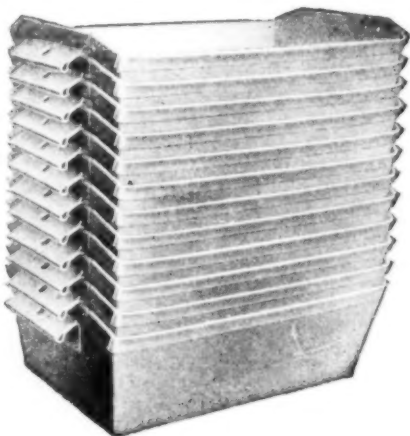
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**"Shop Furniture
Originators"**



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